Textile World
APRIL, 1958
A McGRAW-HILL PUBLICATION

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April, 1958
Volume 108, No. 4

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TEXTILE WORLD Published monthly, with an additional issue in July, by McGraw-Hill Publishing Co., Inc. **EXECUTIVE, SUBSCRIPTION, AND ADVERTISING OFFICES:** 330 West 42nd Street, New York 36, N. Y. **EDITORIAL OFFICES:** 201 East Coffee Street, Greenville, S. C., and 330 West 42nd Street, New York 36, N. Y. Publication Office: 99-129 North Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or changes of address.

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SUBSCRIPTIONS are solicited only from executives, engineers, chemists, and technicians in textile manufacturing and finishing plants. Position and company connection must be indicated on subscription order. Single copies $1.00. Subscription rates: United States and Possessions and Canada, $2.00 a year; all other countries, $15.00 a year. Second-class mail privileges authorized at Albany, N. Y. Printed in U.S.A. Annual index in January issue.

SUBSCRIPTIONS: Address correspondence and change of address to Subscription Manager, TEXTILE WORLD, 330 West 42nd Street, New York 36, N. Y. When address is changed, subscribers should give old as well as new address, including postal zone number. Enclose recent address label if possible. Allow one month for change to become effective.

Postmaster . . . Please send form 3579 to Textile World, 330 W. 42nd St., New York 36, N. Y.

TEXTILE BUSINESS

Textile World

APRIL • 1958

THIS MONTH'S HIGHLIGHTS

Antirecession Moves Will Help

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Auto-Fabric Use Skids

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Most Dividends Secure

•

Consumer Buying Is Key Area

•

Mills Hit Labeling Bill

•

Knitters Keep Fair Trade

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Rival Unions Talk Merger

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Japanese Mills Overproduce

•

Tariff Protection Retained

Antirecession Moves Will Help Textile Mills

The textile industry will reap some direct benefit from the Government's move late last month to ease unemployment in the automobile industry. The $100-million worth of military trucks and trailers to be bought by the Army will involve tire cord and lining material and perhaps tarpaulin canvas indirectly.

But the other antirecession moves that accompanied the truck-purchase order will have only indirect effects on the textile industry. The $1.8-billion spur to home-building should stimulate home-furnishings sales when construction gets in full swing. But there will be a time lag before the stimulus is felt by mills.

The greatest benefit will come to mills through the boost the $5.9-billion program will give the general economy. In spite of minor cycles in textile business that may run contrary to national business, the longer-term fortunes of the textile industry closely follow the ups and downs of the whole economy.

Auto-Fabric Use Skids As Detroit Trims Output

Mills shipping textiles to Detroit watched developments in the auto industry last month with keen interest.

Auto sales early this year slipped from bad to worse, and the decline led some industry leaders in February to drop their estimates for 1958 production to a dismal 4.6-million units. But early in March Ford and Chrysler announced sales increases that sparked the first real hope of the year.

If the 4.6-million estimate should hold, 1958 would be the poorest industry performance since the artificially low levels of the Korean War.

Only last December Detroit had forecast another 6-million-car year. By January the estimates had slipped to 5.3-million units.

And unsold stocks in dealers' hands were at a dangerous level of 900,000 units. This backlog is more than a two-months' supply at a normal sales rate and considerably more at the current rate.

Unless a spurt greater than the one in early March materializes in retail sales, curtailed production is expected to carry over until early summer.

A slowdown in car production hits many important areas of textiles. Detroit uses woven, nonwoven, and knitted fabrics; fiber padding; braided structures; tufted materials; and coated and laminated fabrics. Added to this list is the big market for tire cord from the rubber companies.

Last month a leading manufacturer of automotive fabrics said his sales to Detroit were down 40% from a year ago and he does not expect to make up the loss this year.

Most mills dependent on Detroit are in a similar plight, and what hits hardest is the sudden shift in model demand. Right now, for example, Chevrolet is running ahead of last year, Ford

is behind last year, Oldsmobile is climbing and Buick is slipping.

Last year Detroit used an estimated 375-million sq. yds. of textiles and substitute materials. But if 1958 auto production slumps to the levels now forecast, this yardage will be cut to around 293-million sq. yds. of all types of fabrics.

Included in this yardage are substitute materials like vinyl that have shown marked gains in recent years.

•

Tire cord is also feeling the effects of reduced car production, but some of the loss will be made up if the replacement-tire market expands this year as currently predicted.

Rayon is now being used in virtually all original-equipment tires. A typical 7.50x14 tire uses 7.63 lbs. of rayon tire cord. Taking this amount as an average, the auto industry used about 238-million lbs. last year.

But in 1958 this figure could drop to around 180-million lbs. of rayon in original-equipment tires.

A cut in tire-yarn use strikes hard at yarn producers. At Industrial Rayon, for example, rayon tire cord accounts for the largest share of production and in recent years has ranged from two-thirds to three-fourths of total sales.

This year rayon faces increasing competition from nylon in replacement tires. Nylon has taken about 40% of this market, but rayon is fighting hard.

Stronger high-tenacity rayon tire yarns now available permit the use of smaller-diameter tire cord. So the drag-out battle between rayon and nylon for the big tire-yarn market gets tougher every year.

•

Tire makers are going after the replacement-tire market for foreign cars. This means that U.S. tire-yarn producers are getting a chance to share in this expanding field.

Goodyear, for example, is making tires for over 90% of the autos now being imported. Tire sizes run from 5.20-13 up to 6.00-16. Some of these tires also fit U.S.-made cars.

The amount of yarn that will be used in these tires is not known right now, but the President of Goodrich said last month that the sales potential for such tires will reach $28-million at retail by 1960.

He estimated that there are 400,000 foreign passenger cars registered in the U.S., and he expects this figure to increase by 300,000 this year.

Most Dividends Secure As Mills Hope for Upturn

Dividend payments are being maintained close to last year's levels by most mills.

And a check of those now paying on their common stock indicates there will be only minor changes for the rest of the year. Some dividends could slip a little; certainly no increases are looked for right now.

Shoe-Fabric Sales Rise

Shoe-fabric sales this year may run 15 per cent higher than the $40-million volume rung up in 1957.

New textured satins, jacquards, and other novelty fabrics are proving popular in shoes this year.

Fabrics made up about 20% of all materials used in shoes last year and the popularity of fabrics is expected to grow.

Yarn Prices Advance

Prices began moving up on some man-made fibers last month.

New strength for certain nylon hosiery yarns prompted Du Pont and Enka to raise quotations. Typical advances saw 15/2 nylon leg yarn advance from $5.35 a lb. to $7.37 a lb. and 20/2 yarn from $4.48 a lb. to $5.55 a lb.

Welt yarns were not affected.

Prices have also stiffened on acetate staple fiber and tow.

Celanese moved prices for its regular acetate staple of 3-, 5.5-, and 8-den. per filament from 34¢ a lb. to 36¢ a lb.; and 2-, 12-, and 17-den. per filament went from 35¢ a lb. to 36¢ a lb.

Regular acetate tow was increased from 36¢ a lb. to 37¢ a lb.

Support Prices Lowered For Extra-Long-Staple Cotton

A House Agriculture subcommittee last month approved legislation to give the Agriculture Department authority to **support extra-long-staple cotton as low as 60% of parity, rather than 75% as at present.**

Producers say the lower support price is needed so they can compete with Egyptian cotton prices.

Management takes the attitude that once the industry weathers the second quarter, brighter prospects loom for the second half of the year. If this happens, earnings are expected to be high enough to justify holding dividends at present levels.

Mills that are likely to maintain their present quarterly rate include Cannon at 75¢, Stevens at 37½¢, Cone at 20¢, Pepperell at 75¢, U.M.&M. at 25¢, Lowenstein at 20¢, Burlington at 20¢, West Point at 20¢, and Dan River at 20¢.

While Burlington, Lowenstein, and West Point reduced their last quarterly dividends, there was no indication last month that they would go below current levels for the balance of the year.

●

Man-made-fiber producers have not been faring so well. American Viscose continues to pay out 50¢ a quarter and Celanese is steady at 25¢, but both Industrial Rayon and Enka have skipped payments. Beaunit's present situation puts its $1.50 annual rate on a shaky basis.

While American Viscose is not earning its dividend payments, its large equity in profits from its joint interest with Monsanto in Chemstrand makes the $2 annual payment look secured this year.

Lagging sales for tire yarn in particular have hit Industrial Rayon, Enka, and Beaunit; and until car production recovers, these producers will suffer proportionately.

Two of the biggest carpet manufacturers have skipped payments. Both Bigelow-Sanford and Mohasco passed up first-quarter payments as sales prospects skidded. Firth is down at 7½¢ for the first quarter.

Any decline in dividend payments will probably be less than in corporate profits. In some cases there is less pressure on cash positions from the requirement of inventory accumulation and plant expenditures; so corporations might stretch a point in their treatment of stockholders.

Home Building Declines, But Spring Should See Rise

Housing starts slumped in February to the lowest pace since early 1949.

New starts dipped to 60,000 in February, off 7% from the 64,200 starts in January; and they compared with 63,100 starts in February a year ago.

The seasonally adjusted annual rate of private-home starts is now down to 890,000. The January rate was better than 1-million.

Even though new-housing starts were slipping, the FHA reports that **February applications for FHA mortgages insurance on new homes were 70% higher than last year.**

Washington has worked hard to pump new life into housing by making mortgage financing easier to get. And the $2-billion earmarked by the Government for home-building priming in March should stimulate an even greater surge of construction.

Mills with a stake in the important home-furnishing market have been encouraged by government efforts to bolster housing, and they were hopeful last month that this action and better weather will see renewed activity in the housing field.

Consumer Buying— A Key Area To Watch

Consumer buying of textiles, reflected in department-store sales, is running from 2% to 3% behind last year for the first quarter of 1958.

But mills were encouraged by this trend. Department-store sales are based on dollar volume, and apparel prices have not changed much in the last year. So physical volume has been holding its own and has been increasing in some areas.

Department-store sales provide a real clue to textile movement at retail. Department stores account for 25% of all apparel sales and reflect a big slice of home-furnishings sales.

Mills were regarding department-store sales, consumer spending, and consumer credit as key areas to watch last month for indications of changing psychology.

Wool Flannel Popular

Retailers handling boys' wear are placing a lot of confidence in wool flannels.

Better than 60% of their suit orders for fall are on this fabric, according to a survey made by the Clothing Manufacturers Association of the U. S.

Stores will carry slightly smaller selections of suits in tweeds and blends of all man-made fibers than they did in the 1957 fall buying season.

But buying stepped up sharply in blends of wool and man-made fibers and to a lesser extent in worsteds compared to a year ago.

Consumer spending has assumed a role of top importance in the economic outlook, and many observers believe that it is this type of buying more than government spending or tax reductions that will bring business out of its decline.

So almost everybody has his eye on the consumer to see what he's going to do next with his money.

If the indicators behave favorably, prospects that the business downturn will be mild and short-lived will be strengthened.

But if consumers pull in their horns and department-store sales start sliding off more than at present, there will be a backing up of demand all down the line.

And if consumers start paying off their installment debt instead of spending, **there will be a marked tightening up in business activity.**

Market observers point out that soft-goods retail sales tend to hold up better than durable-goods sales in the early stages of a business recession and do not register a significant decline unless the recession drags on.

•

It is too early to tell what will happen to consumer credit this year. At the beginning of the year it was still high; and if credit on car purchases is taken out of the figures, the increase over last year is even greater.

But if the curve of consumer credit outstanding follows previous trends, shrinkage in the early part of 1958 may be offset by a new high at the end of the year.

Most mill men feel that if the consumer decides to reduce his debts over a two-year period, there could be a worse business decline than in either 1949 or 1954. It was a big increase in consumer debt in 1954-55 that helped the 1955 boom.

Right now there's a shift in consumer spending from hard goods to soft goods, but mills can't bank on any kind of supposition that when the consumer shies away from the durables it spells fortune for soft goods.

The entire economy must prosper for textiles to prosper. Textiles may show signs of recovery first, but they'll never really boom as long as hard goods are on the skids.

Reserve Board Still Acting To Help Business Revive

The Federal Reserve Board is still acting to stem the business slide.

Last month it again lowered the discount rate, this time from 2¾% to 2½%. Only last November the rate was cut from 3½% to 3%, and in January a further reduction brought the rate to 2¾%.

The hope is that business will be increasingly encouraged to undertake new enterprises with borrowed money as interest rates fall.

In another move the Board authorized a one half of 1% cut in reserve requirements for member banks in another step to boost the supply of credit.

The requirements now are the lowest since the mid-1930's. It is estimated that the change will release $3-billion in funds for lending.

•

Last month there was little reaction from mills whose big problems were still concerned with battling too big inventories and unsatisfactory prices.

But mills were keeping a weather eye on money rates, knowing that in the long run they influence inventory levels and plant expansions.

Webbing of Tire Yarn Replaces Steel Springs

A new outlet for tire yarn could develop if a webbing to replace steel seat springs proves successful.

Last month U. S. Rubber Co. introduced a webbing made of two diagonal plies of rubberized rayon tire cord, said to have some advantages in car and truck seats over steel springs.

Cost of a complete web seat is said to be about the same as one using steel springs.

The webbing can also be used in furniture, according to U. S. Rubber.

Mills Hit Labeling Bill As Useless Legislation

Mills and fiber producers were at odds last month over the controversial Textile Fiber Products Identification Act.

This is the bill that would require textile products to carry a stamp, tag, or label showing the percentages of fiber content in the item.

Mill men and apparel manufacturers want the Senate to pigeon-hole the textile-fiber labeling bill; they say the measure is useless legislation.

But fiber producers, chief proponents of the bill, want to see definite percentages of individual fibers listed on a label.

At present, wool is the only fiber required by law to be clearly marked. Legislation is pending to bring cotton and the man-made fibers under jurisdiction of the Federal Trade Commission.

Mills making blended fabrics are particularly opposed to the bill because mere fiber identification, they say, does not give any real clue to the end use of the fabric.

●

Here's a typical problem that could face some mills if the bill ever becomes law—

A fabric of 95% cotton and 5% acetate in the gray state may become 98% cotton and 2% acetate, or some other variation, after the cloth has been finished.

And the mill cannot tell with any degree of accuracy what this variation will be on any given lot of goods.

Actually, the controversy goes back to the so-called "battle of the fibers." The natural fibers and the man-made fibers have long been engaged in a running battle, and the labeling bill looks to some observers like a good place to advertise fiber content.

But mill men keep moving toward production of fabrics engineered for specific end uses, and they hold that the only true criteria for the quality of a fabric is its performance.

Retail groups have also lined up with the mills in opposing the bill. They say they'd like to see informative labeling but don't want the higher prices and policing that mandatory labeling would bring.

The bill passed the House last August, and the Interstate and Foreign Commerce Committee listened to a welter of conflicting testimony last month.

Knitters Hope To Bolster Fading Fair-Trade Pricing

Fair-trade pricing received a body blow last month when General Electric and other nationally known manufacturers dropped the practice.

Most textiles are not concerned with fair trading, but the development was a severe setback to a handful of knitting mills that have attempted to enforce fair-trade prices on certain lines of underwear, socks, and sweaters.

Knitting mills, for the most part, are the only branch of textiles that have a chance at fair-trade pricing. Many knitters control their product right from the mill to the retail store, and during recent years some of the biggest manufacturers have been successful at fair trade.

But in the case of many apparel lines, including knit goods, manufacturers of branded merchandise sell only one store in a city and operate on a suggested retail-price basis. This practice

More Mills Cut Output To Hold Inventory in Line

More cotton mills cut back their production schedules last month as they tried to bring output into line with current reduced demand.

And an extra day's shutdown over Easter was used by some mills in a further effort not to let inventories get out of hand.

Most cotton mills are now on a five-day week, and some are operating on shorter schedules.

Print cloth hasn't yet shown any signs of recovery, and mills were hoping that additional curtailments would pump life into prices.

The key 80-square print cloth still lagged around 17¼¢ a yd., compared with 18¢ a yd. a year ago.

Italian Cotton Mills Look to Export Markets

MILAN, ITALY—Italy's cotton mills would like to boost exports to take care of rising overproduction.

The industry is disappointed with negative results of sales efforts. Present production is more than the home market can absorb. Exports have risen to 8% of total output but are far less than desired.

The recent lifting of currency restrictions on raw-material buying has failed to stimulate the industry, and the Common Market is being eyed with uncertainty.

Burlington Buys Jerks Socks

Burlington Industries, already a giant in hosiery, grew bigger in this field when it purchased Jerks Socks, Inc., last month.

Jerks will continue operations under its own name as a unit of Burlington.

The Bur-Mill division of Burlington manufactures men's and boys' socks, and it will continue to make and distribute hose under its own brand.

differs from the situation involving fair-traded goods where lines are not confined.

Weavers are so far removed from the retail level that fair-trade pricing means little or nothing. A woolen mill, for example, can sell a fabric for $3 a yard and it will turn up in suits priced anywhere from $19.95 to $49.95 at retail. So the distribution pattern for most mills makes fair trading impossible because of all the middle men involved.

•

For knitting mills carrying fair-traded lines, there was every determination last month not to abandon ship.

As one leading knitter said "Fair trade is the very backbone of our business. We couldn't afford to give it up now."

Exponents of fair trade claim that the competitive cycle that starts with lower store prices ends with lower prices to the manufacturer.

And then, they point out, everybody ends up with little or no profit.

But most observers believe the entire fair-trade concept is dying. It has been kicked around in the courts so much that enforcement is nothing but a costly headache.

Rival Unions Talk Merger While UTW Cleans House

The two rival unions, Textile Workers Union of America-CIO and the United Textile Workers Union-AFL, may be getting closer to merger.

Late last month, officers of the two unions started preliminary talks on how to get together after years of bitter feuding.

But a merger, if it does come, will be a hard one; and it will come only under insistent prodding of the parent AFL-CIO body.

UTW last month elected George Baldanzi its new president in a desperate clean-up drive. The union has been trying to get back on the tracks and stave off ouster from the AFL-CIO ever since its former officers, President Anthony Valente and Secretary-Treasurer Lloyd Klenert, were fired last year on charges of misusing union funds.

But Baldanzi was no sooner in the driver's seat than AFL-CIO President George Meany read the riot act to him. Meany is far from satisfied with the UTW elections, and he said the textile union would be tossed out at the end of this month if there wasn't a better effort at reform.

Baldanzi is no friend of TWUA. He made labor history in 1952 by leading 20,000 members out of TWUA into the UTW. After a firey tenure sparked by fights with TWUA, Baldanzi retired from textile-union work, and his return signals new union efforts at organization in the South.

Australia's Wool Income Off

MELBOURNE, AUSTRALIA — A drop of at least $115-million in this season's Australian wool clip is expected.

But the loss would have been about $25-million more if it were not now for the Japanese-Australian Trade Agreements, wool-marketing experts state.

Reports from drought-stricken New South Wales show that the wool fall-off will exceed previous estimates.

•

Wool now being shorn for sale in the April-to-June period has had the impact of a full year of drought. A preponderance of poor wools is not likely to stimulate bidding.

Buyers here still show restraint. U. K. buyers are worried over effects of the U. S. recession, and French buyers are influenced by political unrest in North Africa.

Experts now doubt whether world production of wool in 1957-58 will equal estimated consumption for the period.

This situation could result in a strong position for wool next season. Stocks are generally at their minimum levels, and wool is going into production after sale faster than usual.

New Foreign-Trade Bill Gets Industry Backing

Textile men were giving strong support last month to a Reciprocal Trade Bill introduced to the House by Congressman W. J. Dorn (D., S. C.).

The measure would restore and stabilize America's foreign trade and return control of the nation's foreign-trade policy to Congress.

One of the bill's staunchest supporters is Spencer Love, board chairman and president of Burlington Industries.

Earlier in the year the bigger TWUA with its 285,000 members hoped it could gobble up the smaller 40,000-member UTW and bypass the pangs of formal merger.

•

Last month industry observers were giving even a united textile union slim hope of success in the near future.

Biggest stumbling block is shrinking employment. Since World War II, output per manhour has increased almost 50%, but employment has declined more than 25%.

Another stumbling block is the rise of big textile companies. As a result of consolidations since the end of World War II, nearly half of the basic textile-mill labor force is now employed by 25 firms, with mills widely scattered throughout the South. The union's organizing efforts have met crushing defeats at these plants.

Important too is the fact that over 40% of the industry's workers are women whose pay often supplements their husband's income. The union finds it difficult to arouse a militant attitude among most of these women.

For Japanese Mills— An Overproduction Problem

TOKYO, JAPAN—The Japanese textile industry is having a bad time.

Real instability has hit both mills and fiber producers, and foreign buyers are holding off waiting to see if prices will turn lower.

Heavy overproduction in a period of recession has resulted in a wave of bankruptcies, shutdowns, and layoffs.

Many mills have voluntarily cut output as much as 30%; but if this cutback doesn't help business, the government may step in. If it does, something like this will happen—

- Important allocations of raw fiber would be cut below the originally planned importation of 2.2-million bales of cotton and 920,000 bales of wool this year.
- The recent system of voluntary curtailment by cotton and wool mills would be administered by the government.
- Cutbacks by man-made-fiber producers would be more carefully policed.
- Exports would be encouraged except to those areas now covered by quotas, like the U.S.

•

It's rayon that's the big problem.

Rayon-piece-goods exports have fallen drastically, mostly because the Indonesian market has dried up. Indonesia's dollar and sterling reserves are near zero; and with the country torn by violence and revolution, Japan looks for few, if any, sales there.

And slower weaving schedules have hit hard at rayon fiber producers.

He sees the measure as the only proposal presently before Congress that will preserve the concept of true, mutually advantageous, reciprocal trade.

"This bill," he said, "appears to preserve the machinery for trade between nations and, at the same time, provide standards for intelligent and moderate protection of American jobs."

Last month the Administration was finding stiffer opposition to its foreign-trade proposals. A soft economy and rising unemployment were adding strength to protectionist sympathizers.

The bill is also backed by the American Cotton Manufacturers Institute.

Botany Again Pays Dividends

Botany Mills is distributing its first dividend in almost six years.

Last month directors voted to distribute 18¾¢ a share on the 5% $15 par cumulative preferred stock.

A. M. Sonnabend, chairman and president, said the board's action was the result of improved sales and earnings for 1957 and the favorable 1958 outlook.

Botany was a wool-fabric producer until 1955, when it got out of the business and diversified widely by acquiring cotton mills and companies making goods ranging all the way from luggage to dolls and costume jewelry.

Performance by Botany's textile division was spotty last year, but a company official said that some textile operations did exceptionally well.

Textile Sales Help Du Pont

A big increase in sales to the textile industry helped Du Pont hit record high sales of $1,965-million last year.

The company reports six new plants under construction. Among products involved in expansion are nylon, Orlon, and Dacron.

But most industry observers say the rayon producers created their own problem. A vast expansion of facilities in the 1956-57 investment boom has left them with surplus capacity.

Rayon-filament producers can make 268-million lbs. annually, but for a year now their plants have been operating at 50% of capacity.

And rayon-staple producers have an annual rated output of 1-billion lbs., but current operations are only 60% of capacity.

●

These developments only accentuate the problem of quotas as enforced by Japan on shipments to the U.S.

The Japanese would like to ship more textiles to the U.S., but they are prepared to go along with the quota system in effect last year. Right now they're holding their breath, hoping that more stringent regulations are not going to be applied by the U.S.

Some American observers here are worried about what the quota system is doing to Japanese business. They believe that it is acting as one more lever in returning Japanese business to its prewar relationship with government. The quotas are administered in theory by the industries themselves, but the effectiveness of the quota system hinges on government enforcement powers.

The red tape and complications that quotas impose on Japanese businessmen are strangling some of the smaller producers who would like to export. So they are having to turn to the big export-trade companies.

There has been a heavy traffic in export quotas by exporters leaving the market who turn their quotas over to other companies for a price. The quota system also makes it virtually impossible for new producers to break into the export market so far as the U.S. is concerned.

And the Japanese find themselves in a ticklish position in the Australian market. Australian buyers are screaming for Japanese goods, but the Canberra government has warned Tokyo that if textile exports are not trimmed the whole Japanese-Australian trade treaty signed last year may be in jeopardy.

Program for Mill Aid Laid Before Government

The textile industry could be in line for substantial help if some suggestions put forward last month by the Northern Textile Association are acted upon.

The association is not alone in its ideas for stimulating textile production, and most industry leaders have appealed to Washington at one time or another along parallel lines.

Here's what the NTA would like to see done—

- All procurement of textiles financed or purchased with U. S. funds be given to U. S. mills
- A substantial portion of all cotton exports financed or supported by Government programs henceforth be in the form of textiles
- A countervailing duty equal to the difference between the cost of cotton to U. S. mills and foreign mills be applied to all imports
- Total imports of textiles shall not be permitted to increase further, and existing concentrations of textile imports shall be corrected.

Capital Spending Dips

Mill expenditures for new plant and equipment have been estimated at $132-million for the first half of this year by the SEC and the Dept. of Commerce.

The estimate compares with $225-million spent in the same period last year.

Last month's report said that spending by all business has dropped more than previous estimates.

Mill spending for 1958 is placed at an estimated $252-million, compared with $408-million spent last year.

Spending by all nondurable manufacturers is expected to be off 12% in 1958 compared with 1957.

The report put mill spending in the first quarter of this year at an estimated $72-million and $60-million for the second quarter.

Tariff Protection Retained for Wool Mills

Wool-fabric mills claimed a victory last month when President Eisenhower decided to continue the quota system for another year.

The Administration's action means that the ad-valorem duty on wool-fabric imports will again rise from 25% to 45% when imports exceed 5% of average annual U.S. production for the years 1955, 1956, and 1957.

The ruling to make only minor changes in the quota system just squeaked through. The Administration is far from satisfied

with the way the quota works, and last month Secretary of Commerce Weeks asked for a study of alternative systems.

So mills can be sure that some important changes will be made next year.

•

This year's trigger point is 14.2-million lbs. compared to 14-million lbs. a year ago. Last month everybody was busy trying to figure out just when imports would reach the cut-off point.

Opinion varied widely. At the present rate of entry the trigger point would be reached at the end of June. But since U. S. manufacturers have set an April 15 deadline on orders without a price guarantee from foreign sellers, entries may fall off sharply after that date; and the trigger point could extend into September or October, some observers think. Also, there is less demand for heavier-weight woolens than last year; tweeds, for example, are estimated at only 20% of 1957. This would tend to make the trigger date come later.

When the duty dropped back to 25% on January 1, importers rushed wool fabrics from bonded warehouses so that imports in the early months of this year were abnormally high.

Wool-fabric imports so far this year are over 6-million lbs., twice as much as last year at the same time. But now imports have eased to around 500,000 lbs. a week, about the same as last year's pace to July 25.

•

Nobody was much surprised by continuation of the quota system, but many expected there would be revisions. There was bitter disappointment in the importers' camp. U.S. clothing manufacturers say the quota in its present form brings nothing but confusion and higher prices.

And exporters were similarly upset. Countries most affected are Great Britain, Japan, Italy, and France.

Wool-fabric imports amounted to 16-million lbs. last year, down from the 17.3-million lbs. imported in 1956. So some observers refer to the quota as nothing more than a nuisance value.

They believe that the nosedive in the general economy that started late last year might have had as much to do with the decline in imports as did the higher rates of duty.

Operations in the men's clothing industry, for example, declined sharply in the closing months of 1957; and by February they had slipped to 64% of industry capacity.

And production of woolen and worsted fabrics by U.S. mills in the fourth quarter of last year was off 18% from the same period in 1956 and was 15% below the 1956 third quarter.

•

Total output of wool apparel fabrics last year dipped to 280.2-million yds., a decline of 11% compared to 315-million yds. made in 1956.

Market observers were in general agreement last month that the quota would have been eased if the Administration hadn't been embroiled in a stiff battle to get the Trade Agreements Act extended for five years and if the economy had not turned soft.

The Administration is reluctant to do anything to further alienate protectionist sympathizers until the foreign-trade fight is over later this year.

Fewer Mills Fail

Seventeen textile mills failed in the first two months of this year with liabilities of $2-million, compared to 20 failures with liabilities of $2.5-million in the same period last year, according to Dun & Bradstreet.

Buyer Interest in Fall Woolens, Worsteds Picks Up

Buyers are showing interest again in fall-season woolens and worsteds after three slow sales months.

No one expects a sharp upturn, but business has been so bad that the slight improvement shown in recent weeks has seemed almost like a boom to mill men.

In the immediate future there are some hopeful signs:

- Retail stocks of woolen and worsted garments are thinning.
- Low production last year has virtually liquidated surplus goods along the pipeline.
- There has been a slight shift in preference in favor of wool for summer suits.

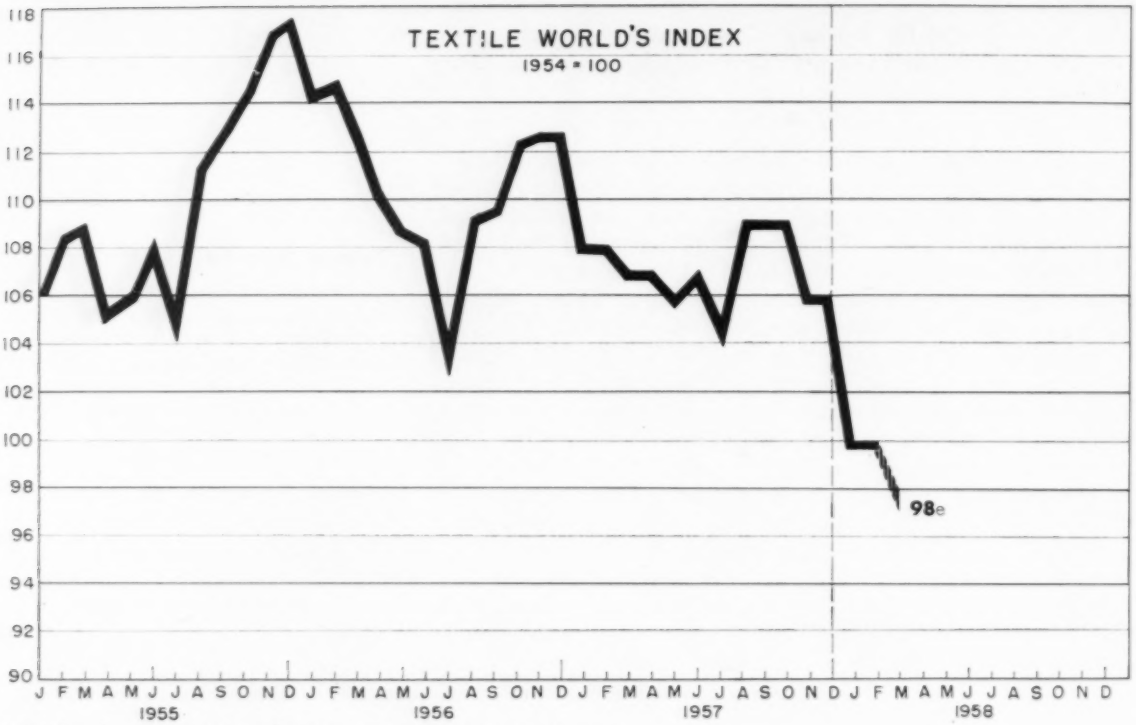
•

But some observers think that wool mills have a rocky road ahead. The industry has been beset by troubles because:

- Synthetics have cut sharply into wool markets.
- The trend toward lighter-wear fabrics has lowered consumption.
- Unstable raw-wool prices have put buyers on a hand-to-mouth basis.

Demand for woolens has slumped all over the world but especially in the U.S., where the trend toward casual wear is more pronounced than in most wool-wearing countries. This trend has put more people into shorts and sport shirts and cut down on the wearing of suits and heavier garments made of wool, despite a growing population. One result is that suit manufacturers are operating at only about 64%.

Weakness in the long-range prospects for the industry was reflected last month in the Australian wool auctions, where prices were consistently soft.



Index of manhours worked in the textile industry adjusted for changes in productivity

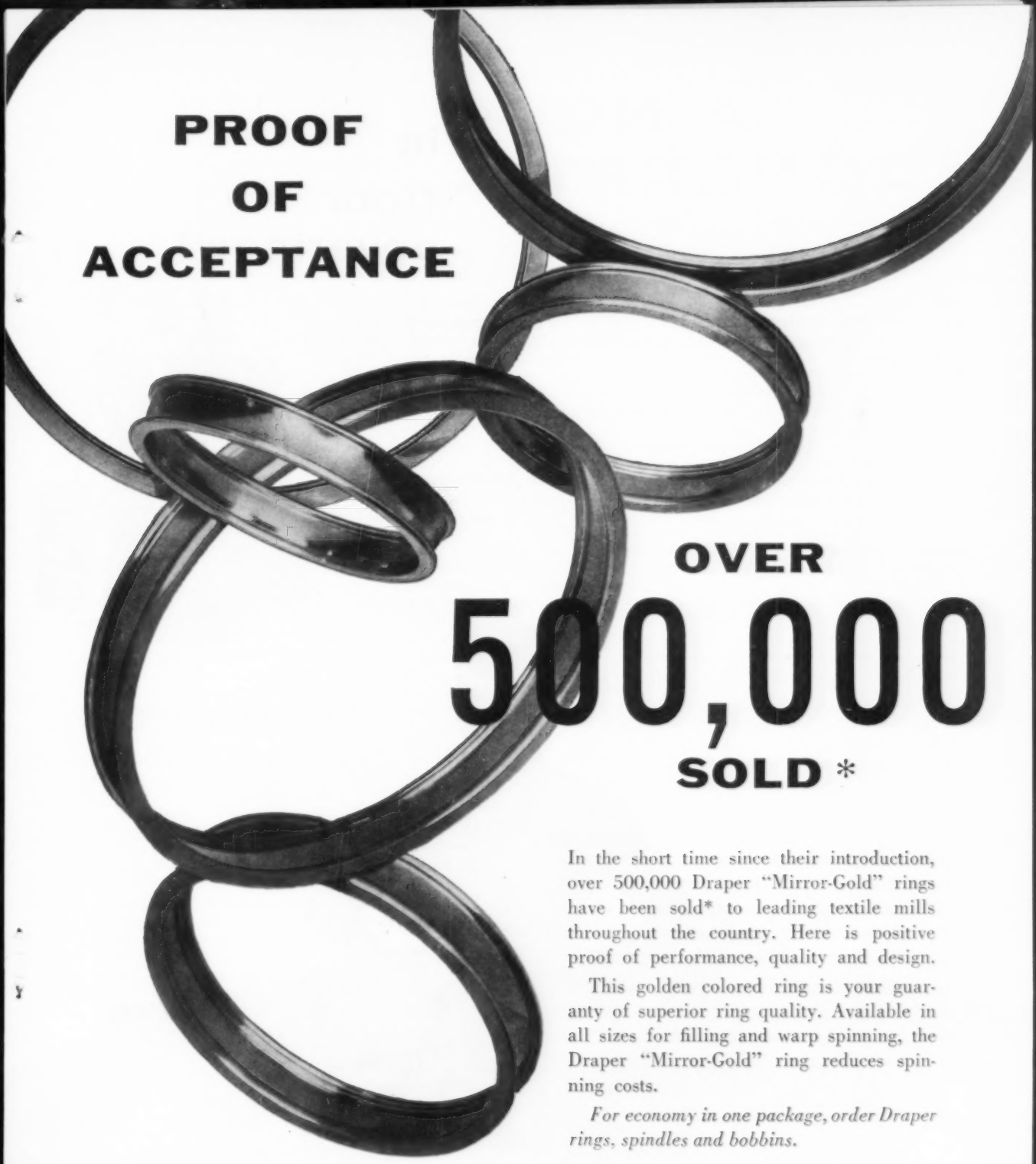
Textile World's Monthly Indicators

	Latest Month	Previous Month	Year Ago
Textile World's Index (1954 = 100)	**98**	**100**	**107**
Employment (thousands) B.L.S.	942.2	949.9	1024.5
Production Workers (thousands) B.L.S.	851.9	859.5	932.7
Weekly Earnings B.L.S.	$56.55	$56.25	$58.80
Hourly Earnings B.L.S.	$1.50	$1.50	$1.50
Weekly Hours Worked B.L.S.	37.7	37.5	39.2
Production Index (1947–1949 = 100) F.R.B.	96	94	105
Wholesale Price Index (1947–1949 = 100) B.L.S.	94.2	94.6	95.7
Manufacturers' Sales (million $) Commerce	967	999	1174
Manufacturers' Inventories (million $) Commerce	2682	2679	2766
Inventories-to-Sales Ratio	2.77	2.68	2.36
Exports (million $) Commerce	151.8	139.3	210.0
Imports (million $) Commerce	76.9	68.1	78.2
Stock Price Index (1941–1943 = 10) Standard & Poor's	19.19	18.85	21.67
Failures (number) Dun and Bradstreet	13	4	10

National Economic Indicators

	Latest Month	Previous Month	Year Ago
Industrial Production (1947–1949 = 100) F.R.B.	130	133	146
Consumer Prices (1947–1949 = 100) B.L.S.	122.3	121.6	118.2
Wholesale Prices (1947–1949 = 100) B.L.S.	118.9	118.8	117.0
Population (millions) Census	170.4	170.1	167.2
Unemployment (millions) Census	5.2	4.5	3.1
Employment (millions) Census	62.0	62.2	63.2
Personal Income (billion $) Commerce	341.8	343.6	338.5

PROOF OF ACCEPTANCE



OVER 500,000 SOLD *

In the short time since their introduction, over 500,000 Draper "Mirror-Gold" rings have been sold* to leading textile mills throughout the country. Here is positive proof of performance, quality and design.

This golden colored ring is your guaranty of superior ring quality. Available in all sizes for filling and warp spinning, the Draper "Mirror-Gold" ring reduces spinning costs.

For economy in one package, order Draper rings, spindles and bobbins.

** As of publication date.*

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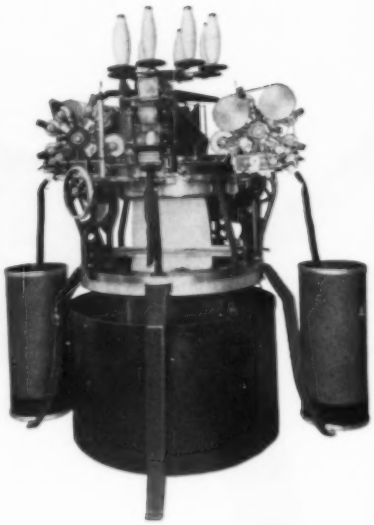
A NEW CONCEPT... in floor coverings !

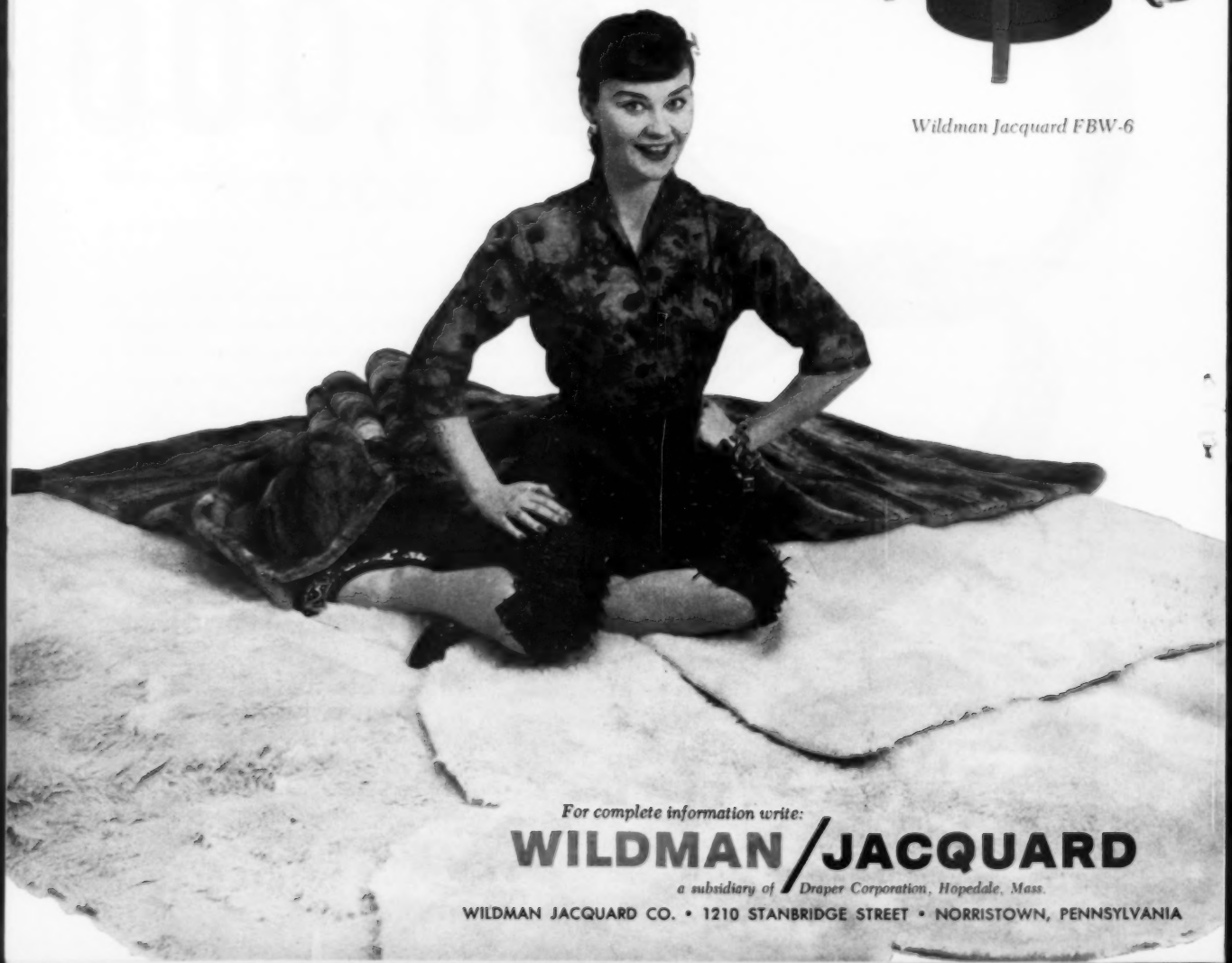
The Wildman Jacquard "Hi Pile" knitter opens up new and broader markets in the home furnishing field.

Floor coverings composed of natural, synthetic, or a combination of fibers can be produced on the FBW-6 knitter.

For high fashioned outerwear . . . home furnishings . . . or industrial fabrics, the Wildman Jacquard "Hi Pile" knitter offers you wider markets . . . greater profits.



Wildman Jacquard FBW-6



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WILDMAN JACQUARD CO. • 1210 STANBRIDGE STREET • NORRISTOWN, PENNSYLVANIA

Alexander Mills, Forest City, N. C., is modernizing 42 spinning frames by increasing ring size and lengthening traverses.

Berkshire Knitting Mills, Reading, Pa., has bought Melbrooke Textiles, Inc., Pottstown, Pa.

Blair Mills, Belton, S. C., is planning to build a 2,600-sq.-ft. office building valued at about $40,000. The plans include space for the general office staff; offices for the purchasing agent, superintendent, and president; a cotton sampling room; a storage and vault room; a facility room; and two rest rooms.

Carolina Worsted Mills, Dillon, S. C., is converting four roving frames, 36 spindles each, to Whitin American-system long draft. Four Whitin worsted spinning frames, 200 spindles each, are also being converted to Whitin American-system long draft.

William L. Carter Co., Needham Heights, Mass., has announced that new display units and packaging are available for spring-summer selling. Infants' shirts are packaged two to a package. All baby bath-set combinations (towels, cloths, and a bath sponge) are packaged in a gift box. A self-service counter display unit for children's Spanky Pants is made of wood and masonite in a white finish with a pink and blue diamond motif. Self-service counter display units are also available for women's Spanky Pants. The units are made of wood and masonite with a flecked white finish.

Crescent Spinning Co., Belmont, N. C., is installing two Whitin Superflex frames with a total of 2,160 spindles.

Dorr Woolen Co., Guild, N. H., has installed new equipment, including a carbonizer, in a new 55,000-sq.-ft. addition. The company is now operating on three shifts.

Franklin Process Co., Spinning Div., Fingerville, S. C., has bought three Whitin Axi-Feed blenders and an Axi-Flo cleaner.

Gotham Hosiery Co., Canada, Ltd., St. Hyacinthe, Que., is installing British and American knitting, finishing, and quality-control equipment at a cost of about $750,000.

P. H. Hanes Knitting Co., Winston-Salem, N. C., is planning to build a knitting plant adjacent to its modernized spinning plant. The 105,000-sq.-ft. building will be completed by Nov. 1 at a cost of about $1,000,000.

Hub Hosiery Mills, Lowell, Mass., has sold its seamless-hosiery business to Alex Lee Wallau, Inc., New York, N. Y., a distributor of children's and teen-age hosiery.

Indian Head Mills, Inc., Cordova, Ala., has sold its Wheeling, W. Va., finishing plant, a three- and a four-story building with 250,000 sq. ft. of floor space, to a syndicate of local businessmen who plan to modify the buildings to attract new industry. The purchase price was not disclosed.

Julius Kayser & Co., New York, N. Y., has announced that its board of directors has approved the merger of its company with Chester H. Roth Co., New York, N. Y. The new company, to be known as Kayser-Roth Corp., will continue to operate all business now being conducted by both companies in the U. S. and Canada.

Mayfair Chenilles, Inc., Dalton, Ga., has started building an addition to its plant. The addition is to have 38,500 sq. ft. of floor space, which will give the plant nearly 60,000 sq. ft.

Perennial Print Corp., Paterson, N. J., has bought a 50% interest in Palmer Dyeing & Finishing Corp., Fair Lawn, N. J.

Schwehn Textiles, Inc., West Collingswood Heights, N. J., has been formed to spin worsted yarn for knitting and weaving. Counts from 6s to 30s, mainly in quarter-blood grade, will be spun.

Selma Hosiery Co., Dillon, S. C., is a new company that will probably start operations late this month. Construction of a new mill was completed sometime in March.

Southern Weaving Co., Greenville, S. C., has bought Anderson Narrow Fabrics, Inc., and Narrow Fabrics Finishing Co., both of Anderson, S. C. The two plants will operate as wholy owned subsidiaries of Southern Weaving. The companies will continue to operate without any changes in personnel.

Sterling Knitters, Inc., Hickory, N. C., will reopen and will employ 70 people. The equipment and the real estate of the company was acquired by L. L. Martin, Dolan Snyder, and Clifton Bolich.

Taylor-Bramley Co., Chicopee Falls, Mass., may shut down in the near future because it lacks trained workers. No sewing or knitting is being done, and no new orders are being taken.

United Merchants & Mfrs., Inc., New York, N. Y., has transferred the deed of the Brookford Mills property, Newton, N. C., to Shuford Mills, Inc., Hickory, N. C. The sale price was about $250,000.

United Knitting Mills Corp., Mount Gilead, N. C., is opening a plant in Monroe, N. C.

Woodside Mills, Greenville, S. C., has combined the Haynsworth, Simpsonville, and Liberty plants into the Fancy Goods Div. These plants produce blends of man-made fibers and cotton. The Greenville, Easley, and Fountain Inn mills have been combined to form the Plain Goods Div. These plants are entirely concerned with cotton production.

CALENDAR

April

Cotton Merchandising Research Clinic, annual meeting, Univ. of Texas, Austin, Tex., April 10 and 11

American Cotton Manufacturers Institute, annual convention, Hollywood Beach Hotel, Hollywood, Fla., April 10 to 12

AATCC, Piedmont Section, Washington Duke Hotel, Durham, N. C., April 11 & 12

Alabama Textile Manufacturers Association, annual meeting, Buena Vista Hotel, Biloxi, Miss., April 16 to 18

AATCC, Midwest Section, Netherland-Hilton Hotel, Cincinnati, Ohio, April 19

Georgia Textile Operating Executives, spring meeting, A. French Textile School, Georgia Institute of Technology, Atlanta, Ga., April 19

National Association of Hosiery Manufacturers, annual meeting, and Hosiery Industry Conference, Hotel Roanoke, Va., April 21 & 22

Cotton Manufacturers Association of Georgia, Boca Raton Hotel & Club, Boca Raton, Fla., April 23 to 26

Phi Psi Textile Fraternity, annual convention, Philadelphia, Pa., April 24 to 26

Delta Kappa Phi Fraternity, annual meeting, New Bedford Textile Institute, New Bedford, Mass., April 25 & 26

Institute of Textile Technology, meeting of the technical advisory committee & board of trustees, Charlottesville, Va., April 29 & 30

Fiber Society, Inc., spring meeting, Clemson House, Clemson, S. C., April 30, May 1

May

Underwear Institute, annual meeting, Hotel Biltmore, New York, N. Y., May 1

Alabama Textile Operating Executives, spring meeting, Thach Auditorium, Auburn, Ala., May 2 & 3

Textile Market Research Conference, sponsored by National Cotton Council, Hotel Statler, New York, N. Y., May 6 & 7

Canadian Textile Conference, Queen Elizabeth Hotel, Montreal, Que., May 6 to 8

AATT, Della Robbia Room, Vanderbilt Hotel, New York, N. Y., May 7

American Cotton Manufacturers Institute's Fiber-Testing Laboratory, open house, Clemson College, Clemson, S. C., May 7 & 8

AATCC, northern New England section, Lowell Technological Institute, Lowell, Mass., May 9

June

Tufted Textile Manufacturers Association, annual convention, Daytona Plaza Hotel, Daytona Beach, Fla., June 4 to 7

National Materials Handling Exposition, Public Auditorium, Cleveland, Ohio, June 9 to 12

National Conference on Materials Handling, sponsored by American Society of Mechanical Engineers, to be held concurrently with the National Materials Handling Exposition, Public Auditorium, Cleveland, Ohio, June 9 to 12

Gordon Research Conference on Textiles; Colby Junior College, New London, N. H.; New Hampton School, New Hampton, N. H.; Kimball Union Academy, Meriden, N. H., June 9 to August 29

September

The Fiber Society, Inc., Queen Elizabeth Hotel, Montreal Que., Sept. 9 & 10

AATCC, Piedmont Section, Hotel Charlotte, Charlotte, N. C., Sept. 19 & 20

Textile Quality Control Association, fall meeting, Grove Park Inn, Asheville, N. C., Sept. 25 & 26

October

National Cotton Council, Chemical Finishing Conference, Washington, D. C., Oct. 1 & 2

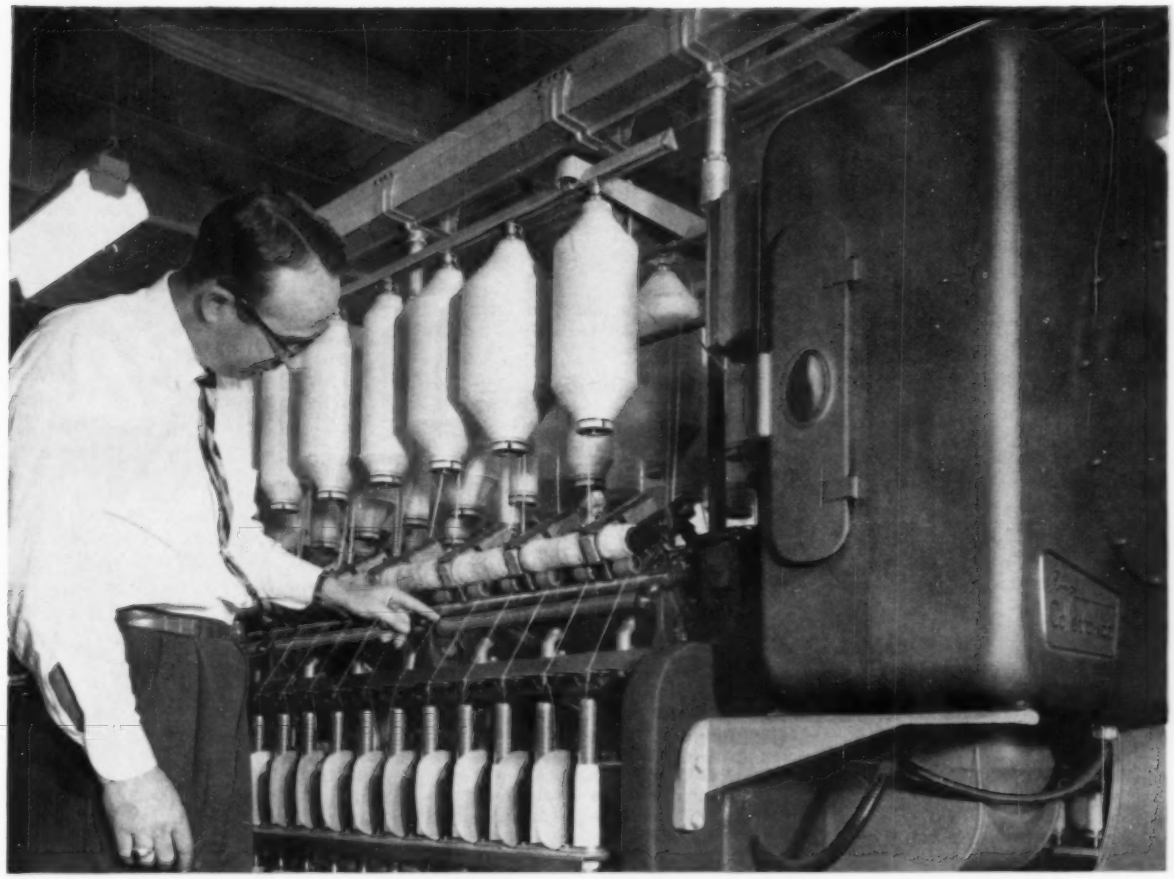
Southern Textile Exposition, Textile Hall, Greenville, S. C., Oct. 6 to 10

Georgia Textile Operating Executives, fall meeting, A. French Textile School, Georgia Institute of Technology, Atlanta, Ga., Oct. 11

Textile Recorder International Textile Machinery & Accessories Exhibition, Belle Vue, Manchester, England, Oct. 15 to 25

Alabama Textile Operating Executives, fall meeting, Thach Auditorium, Auburn, Ala., Oct. 25

AATCC, national convention, Hotel Conrad Hilton, Chicago, Oct. 30 to Nov. 1



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Rugged steel collection box with rounded edges withstands bumps, knocks, has longer life.

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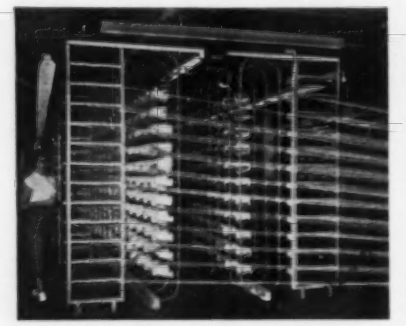
McBRIDE CREEL CORNER

MAGAZINE WARPING CREELS AND COMPONENTS



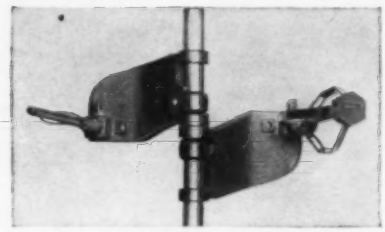
McBride SRM Inside Loading Creel. Both sides are loaded from center aisle. Also arranged for outside loading.

Compact—engineered to do the job within the space available.

Flexible—each creel is individually designed. Your needs are our first concern.

Accessible from loading to drawing-in, McBride creels are easily and efficiently operated.

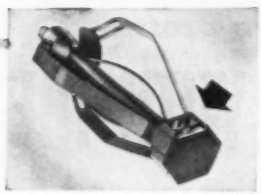
Rigid monorail construction and sturdy rust-proofed tubing support the largest packages and withstand the highest speeds. Package arms and tensions are easily positioned and firmly secured. The floor under the creel may readily be cleaned to prevent the accumulation of lint.



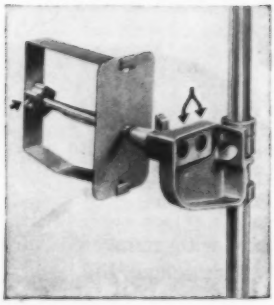
New McBride Swing Arm Assembly—completely redesigned for greater rigidity. Now the heaviest packages are securely and rigidly supported.

McBRIDE PACKAGE HOLDERS—FLEXIBLE—VERSATILE

The Bowed Spring Spindle is tilted upward to a 5° angle to prevent slippery yarns from sloughing off the cone. Arm swings out for package change, snaps back in running position where it is secured by internal ball type spring lock held by an indented, hardened steel collar.



Quik-Change Cone Holder rotates to facilitate typing of transfer tails. Completely rust-proof, of sturdy construction, it greatly reduces changeover time from cones to tubes—of vital importance in creels of large capacity. No set screws. Just press thumb release to remove. Snaps back on.



Quik-Change Large Package Holder supports packages with inside diameter of 2" or greater. Positive spring action holds package firmly. Press button thumb release permits quick change from one style package to another.

Note that spindle arm can be repositioned for shorter radius as desired. Such flexibility saves space and increases adaptability. McBride Quik-Change Large Package Holder is available in a full range of sizes to handle any style of large package.

Let McBride Study Your Warping Situation. You Might Be Surprised With The Costs You Can Save, The Improved Quality In The Warps You Produce.

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Letters From Readers

We welcome your comments. Whether you agree or disagree, with us or anybody else, we will be glad to have you air your views.

Unless you ask us not to, we will use your name and company connection when your letter is printed. If you prefer to have your opinions appear unsigned, we will respect your confidence by using only a set of initials.

Write to Editor, Round Table, TEXTILE WORLD, 201 E. Coffee St., Greenville, S. C.

GOOD SUPERVISORS ARE HARD TO FIND

Dear Editor:

It is becoming increasingly hard to find men who are both willing and able to supervise others in a textile plant. There are two main reasons for this shortage of capable men.

First, other industries are offering more pay and better opportunities. They are getting many of the best men in textiles as well as attracting most of the young men just out of school.

Second, the difference in pay of machine fixers and second hands in the mill is so slight and the increase in responsibility is so big that a lot of men don't want to start up the supervisory ladder.

If something is not done to make the supervisor's job more attractive, the textile industry will soon find itself in dire need of enough men capable of directing its activities.

J. M. C.

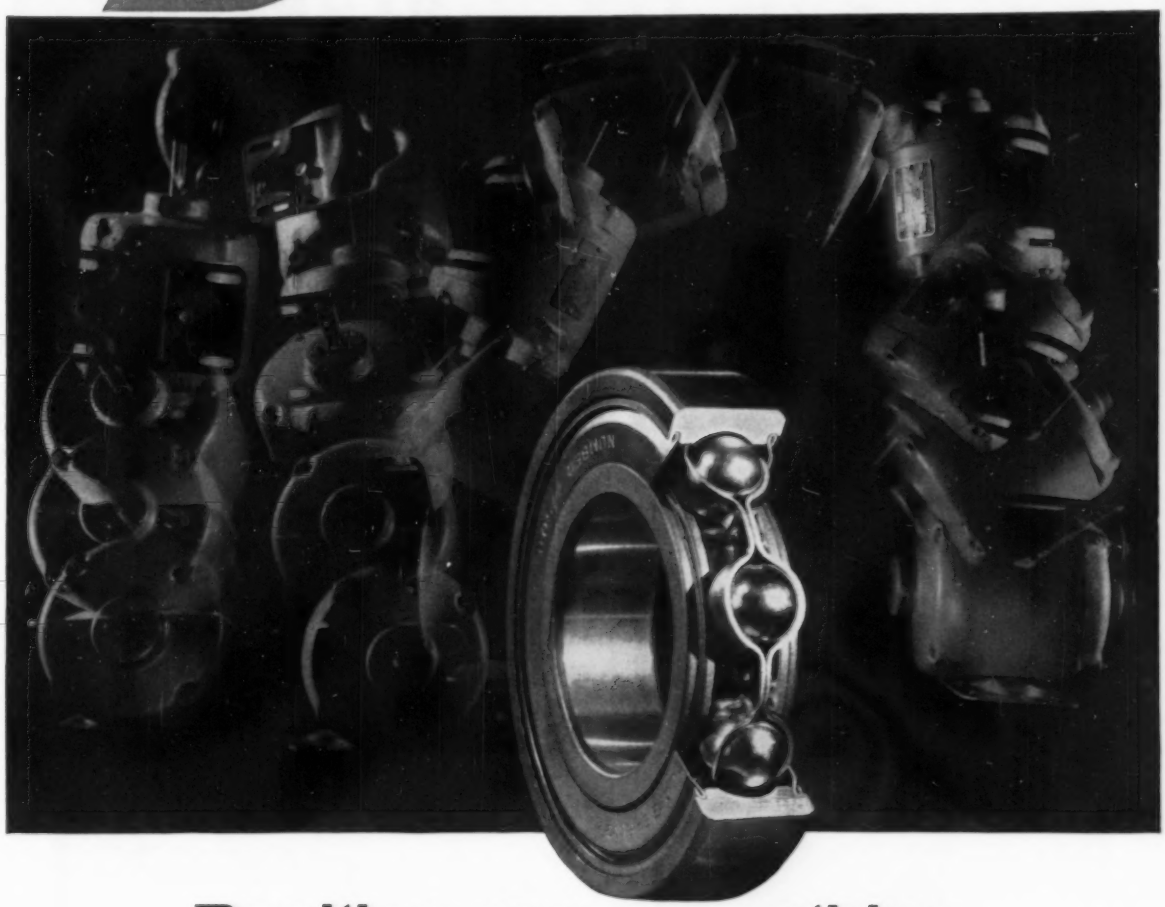
Atlanta, Ga.

HOSIERY-LENGTH PROBLEMS

Dear Editor:

The excellent article "New Techniques To Solve Hosiery-Length Problems" [TEXTILE WORLD, Jan., '58, p. 82], was timely and merits careful study by full-fashioned- and seamless-hosiery machine fixers. Because of my experience of 25 years as a full-fashioned fixer and more than 15 years

ND FACTS



Position means nothing in the life of a ball bearing!

Upside down . . . right side up . . . sideways! Electric motors made with New Departure ball bearings keep their performance promises in *any* position.

Such versatility is welcomed by manufacturers of textile equipment and machinery, too . . . because it means infinite freedom of design. Accessibility for service need not be the ruling factor in motor location. For motors made with New Departure ball bearings . . . like the bearings themselves . . . are built to be forgotten for long periods of service without need for relubrication. Best of all, you'll find there's no adjustment necessary because of wear.

If you're looking for ways to simplify product design while you improve product performance, write or call for details on New Departure ball bearings. New Departure Div., General Motors Corp., Bristol, Conn.

1908–1958

GM

FORWARD FROM FIFTY

ND NEW DEPARTURE

DIVISION OF GENERAL MOTORS, BRISTOL, CONN.

NOTHING ROLLS LIKE A BALL

For more data, write this page number on Reader-Service card. →

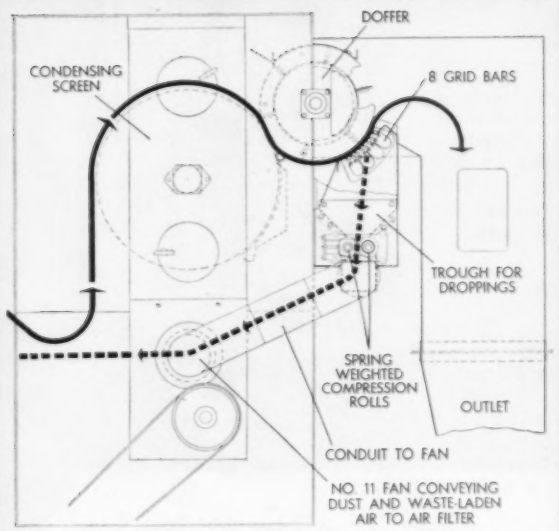
Poor cotton giving you trouble?
Dust and fly a problem?

NEW SACO-LOWELL *Automatic* CLEANING UNIT

FOR ALL NO. 11 DUST & WASTE EXTRACTORS

★ Offers 30% (approx.) increase in cleaning efficiency of No. 11 Dust and Waste Extractors.

★ No extra beating of the stock — no increase in fibre breakage or neps



This view shows the passage of stock and droppings through the No. 11 Desk and Waste Extractor. All droppings are automatically carried away. Stock movement is indicated by solid lines; droppings by broken line.

Here is one of the low cost answers to help in proper cleaning of the poor 1957 cotton crop. This new Cleaning Unit is completely automatic, waste never has to be removed manually, does not require extra labor to operate. Mill tests show that the quantity of trash removed by this NEW CLEANING UNIT is equal approximately to 1/3rd of the amount of waste removed by any efficient unit in the opening line. Waste taken out includes motes, stem, leaf, boll and seed fragments. Is installed easily and inexpensively, assures cleaner stock that results in higher quality yarn.

Contact your nearest Saco-Lowell Sales Office for complete information.

SACO-LOWELL SHOPS

60 BATTERYMARCH STREET, BOSTON 10, MASS.

Shops at BIDDEFORD & SACO, MAINE; SANFORD, N.C.; EASLEY, S.C. Sales Offices: CHARLOTTE · GREENSBORO · GREENVILLE · ATLANTA

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as a seamless knitter and fixer, the following comments might be helpful to other readers.

After reneedling two full-fashioned machines, we found a difference of 0.007 in. from the top table to the backs of the needles with a micrometer gauge having a contact foot 0.5 in. wide. Periodic checks with a micrometer gauge will help to maintain within-machine variations.

The recommendation for light tension is good. Our preference was for the falling ring, but knitters should be taught to thread the rings so the friction of the yarn on the upper side of the ring tends to draw it away from the vertical U loop.

We also used the falling ring on seamless machines to keep idle yarns from getting too slack for yarn changes. The U loops should be kept clean and dry.

Yarn tensions with spring pressure have the fault of increasing pressure when knots pass through them. We had better results with gravity tensions. We used tensions with flat tongues that we shortened and turned downwards 40° from the horizontal. This flat tension mounted on a small rod could easily be controlled automatically for a variable tension by a reciprocating motion.

We got the best results on coarse-gauge circular machines with self-threading gravity disks and washers where the creeping of the upper disk made the tension self-cleaning.

Yarn robbing is a serious factor in dealing with hosiery lengths on seamless machines. We do not know that it has ever been overcome.

Knots on the sides of large cones caused press-offs. A swinging arm with an eye close to the cone eliminated the trouble.

WALTER A. SIMONDS
Washington, D. C.

COTTON THREAD WASTE IS MORE ABSORBENT THAN CLOTH

Dear Editor:

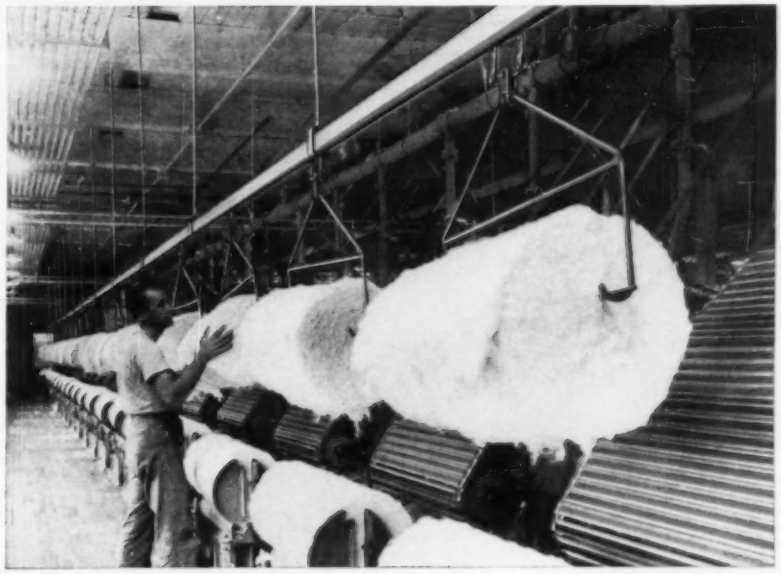
Some interesting tests have been carried out for the Institute of Thread Machiners, Inc., by Robert W. Hunt Co. The tests were made to show the comparative absorbent qualities of cotton thread waste and cotton cloth.

In the tests, No. 1 colored cotton thread waste absorbed oil to the extent of more than 400% of its conditioned weight. Specimens of commonly used wiping cloths absorbed less than 140% of their conditioned weight in oil. Tests were also made of other weights of thread and cloth.

All the samples were conditioned at 70° F. and 65% r.h. for 24 hrs. before

. . . for a new textile plant going into production

or the expansion of present production lines



R-W "Zig-Zag"® CONTINUOUS POWER CONVEYORS

provide maximum efficiency and economy

R-W "ZIG-ZAG" Conveyors effectively meet the demands of today's highly competitive textile market by efficiently utilizing valuable overhead space to provide a continuous flow of materials for maximum production. R-W "ZIG-ZAG" Conveyors are extremely flexible . . . easily move up, down, in, out and around . . . carry unit loads up to 125 lbs. at speeds from one inch to 100 feet per minute. R-W "ZIG-ZAG" Conveyor systems may be quickly and easily altered, expanded or relocated by plant personnel. "ZIG-ZAG" Conveyors are designed, manufactured and backed by the leading firm in this field for over 75 years . . . Richards-Wilcox.

"Zig-Zag" QUALITY FEATURES

- **SAFE** . . . all moving parts of the chain are fully enclosed and protected from lint, dirt and dust.
- **STRONG** . . . a continuous chain of alternate horizontal and vertical wheel units travel through a rugged steel track.
- **FLEXIBLE** . . . easily installed in any plant. Easily changed or relocated to meet any plant alterations or requirements.
- **ECONOMICAL** to purchase, install and operate.
- **SPACE SAVING** . . . available with standard horizontal or vertical curves . . . two foot radius (others available).

WRITE TODAY for complete information Request Catalog No. A-93R

Leading manufacturer of Track Hangers, all types of hardware and Electric Door Operators for over 75 years.

Richards-Wilcox MANUFACTURING COMPANY "MATERIAL HANDLING DIVISION"

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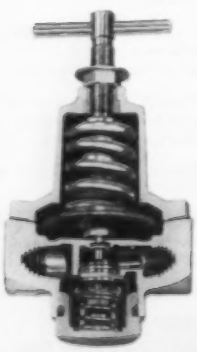
FACTS about Norgren PRESSURE REGULATORS

Reduce Compressed Air Costs in Textile Mills

...Cut Maintenance Costs

For any air operated equipment, there is one pressure at which it is designed to operate most efficiently. Above that pressure, equipment will wear excessively with no significant increase in output, and compressed air will be wasted. No matter what the application, you can choose a Norgren Pressure Regulator that will reduce line pressure to the desired working pressure. Results will include longer equipment life, lower maintenance costs, less down-time and savings in compressed air costs.



- **Norgren Pressure Regulators are Highly Accurate** over a wide operating range.
- **Regulated Pressure is Held Constant** even with widely fluctuating line pressure and rapidly varying air flow.
- **Flow Capacity is Large**—a. Balanced valve construction; b. Large effective diaphragm area; c. Improved baffle and siphon performance; d. Large passages; e. Large valve openings.
- **Choice of Relieving or Non-Relieving Regulators.**

For complete information on all your regulator needs ⅛" to 2" inclusive, call your nearby Norgren Representative listed in your telephone directory—or WRITE FOR NEW No. 900 CATALOG.

C. A. NORGREN CO.

3404 SOUTH ELATI STREET ENGLEWOOD, COLORADO

testing. The oil, S.A.E. 10-20, was poured into a shallow pan and wiped up by cloth or waste until all further absorbency was lost. Then the specimens were drip-dried for 18 hrs. before weighing.

One reason given for the greater absorbency of thread waste is the fact that the entire circumferential area of each of the hundreds of threads in a handful of waste is exposed for maximum absorbency. In wiping cloths, only two sides of each thread are exposed.

A full report of the tests can be obtained from the Institute of Thread Machiners, Inc., 141 E. 44th St., New York 17, N. Y.

JOHN ANTHONY
John Mather Lupton Co., Inc.
New York, N. Y.

WORKERS ARE NOT MACHINES

Dear Editor:

A complaint often heard in the mill is, "I don't like to be treated like a machine." So some supervisors figure that since no machine is named Joe, they can make the worker feel like a human being by calling him by his first name.

But you should go further to make workers feel that they rate as individuals. Here are some suggestions:

1. Ask for personal opinions whenever possible.
2. Be quick to praise for any skill, even if it is one not connected with the job.
3. Discuss future plans with the workers.
4. Use the names of workers in bulletins, company magazines, letters to employees, and group discussions.

If you treat your workers like machines, you cannot expect them to think, work, or perform any better than machines.

GEORGE M. DODSON
Harrisburg, Pa.

CORRECTION

Dear Editor:

In your News About Men department [TEXTILE WORLD, Jan., '58, p. 200] you have a picture of Mr. James Catchings with an item stating that he has been promoted to superintendent of spinning at Callaway Mills Co.'s Unity Plant.

We do have a Unity Plant, but actually Mr. Catchings title is superintendent of Unity Spinning Plant.

I. HUGH CAMPBELL
Callaway Mills Co.
LaGrange, Ga.

Since 1898

Dary Ring Travelers...

THE DARY RING TRAVELER CO.

TAUNTON, MASSACHUSETTS

LINDSEY L. PHILLIPS, Treasurer, Taunton, Mass.

Consult your friendly Dary Representative:

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CRAWFORD [illegible] RHYNER — Box 2261, Greenville, S. C.

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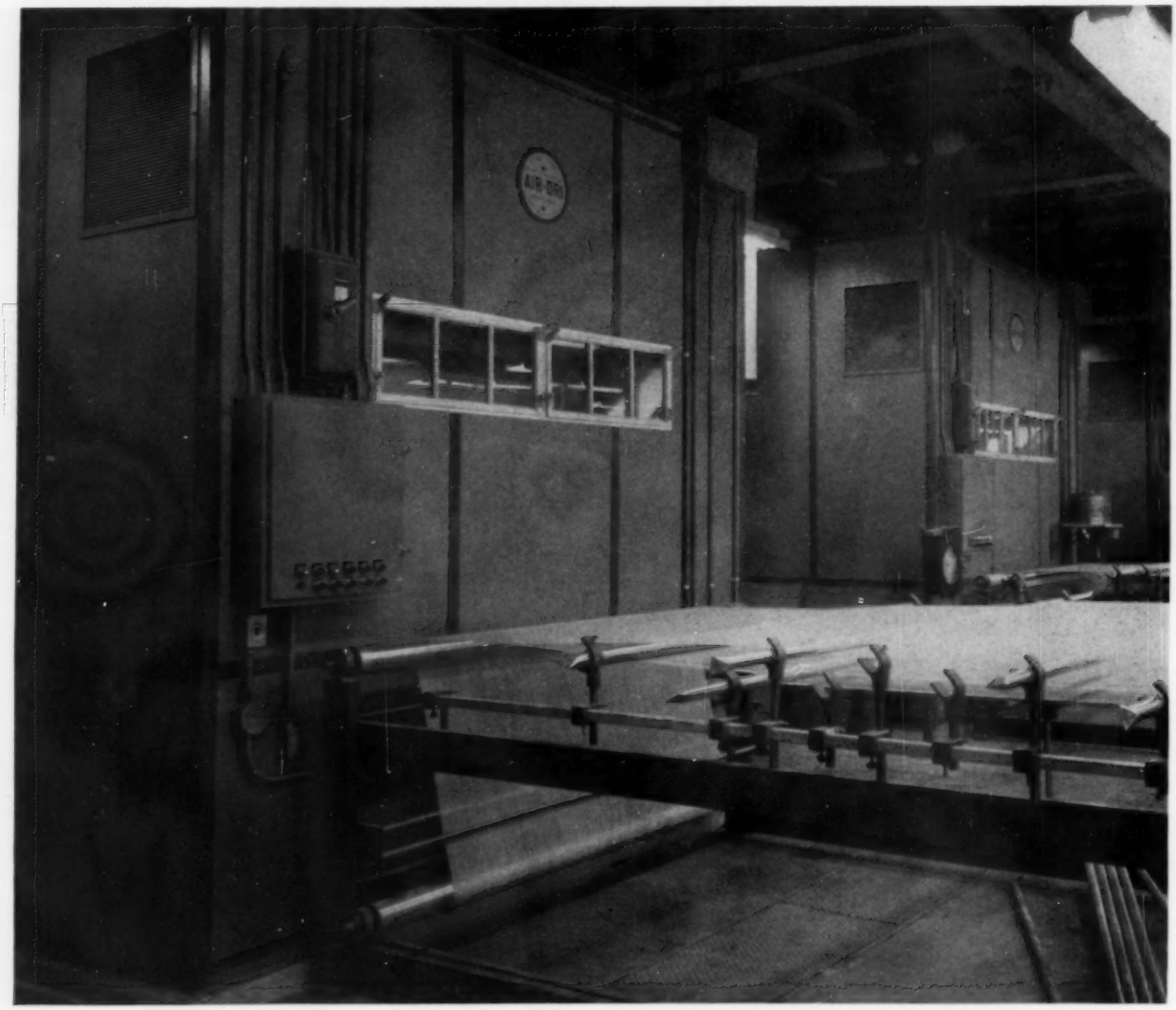
West Point Foundry brings you the newest in modern hot-air slashers

WEST



This brand new slasher room features three West Point Foundry AIR-DRI® slashers—designed, made and *serviced by* an experienced slasher manufacturer located conveniently in the Textile South. West Point Foundry's AIR-DRI® slasher has been carefully engineered for ease of operation and minimum maintenance. For cotton, worsted, and spun synthetic warps. Available with two or three fans . . . for either 54½″ or 72″ warps. Whether it's a complete slasher installation, as shown, or modernization of your present equipment, you can expect the best when you call West Point Foundry . . . specialists in slashers.

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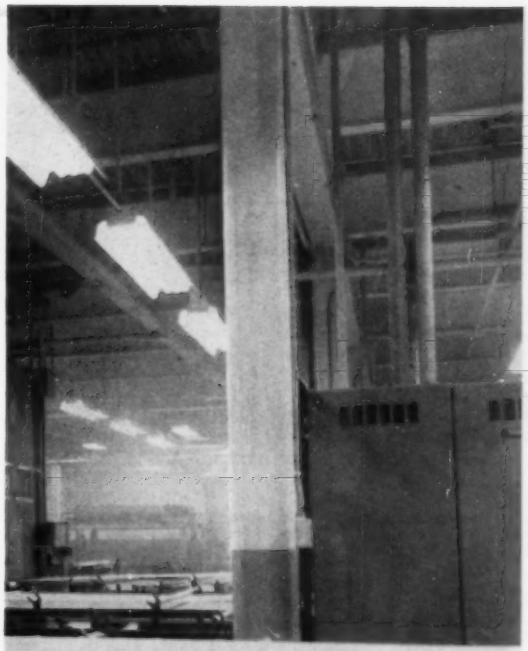
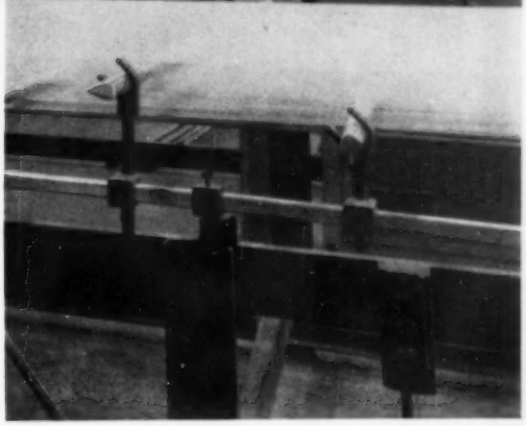
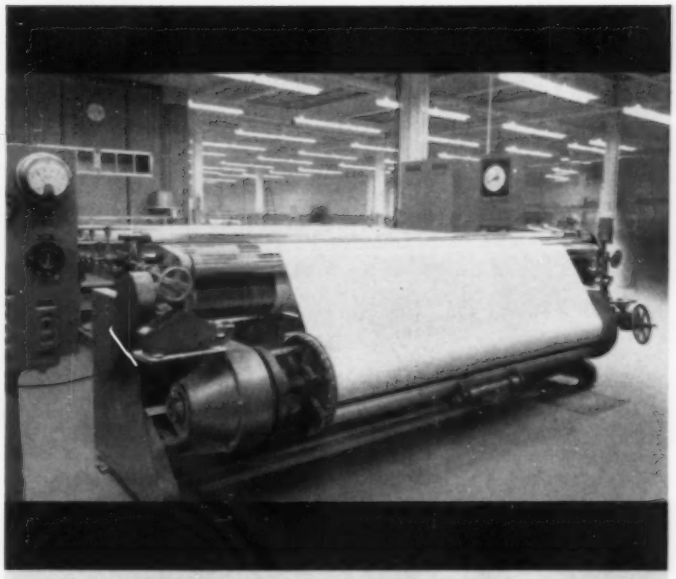
POINT AIR-DRI®







Model 571 Slasher Head End with exclusive traversing headstock

The massive headstock and tailstock center the widest and narrowest loom beams with no long arbors projecting beyond the heavy cast iron frames.

REMEMBER...

You have a choice with West Point, because West Point Foundry makes both MULTI-CYLINDER *and* AIR-DRI *slashers.*

WEST POINT Foundry & Machine Company

WEST POINT, GEORGIA

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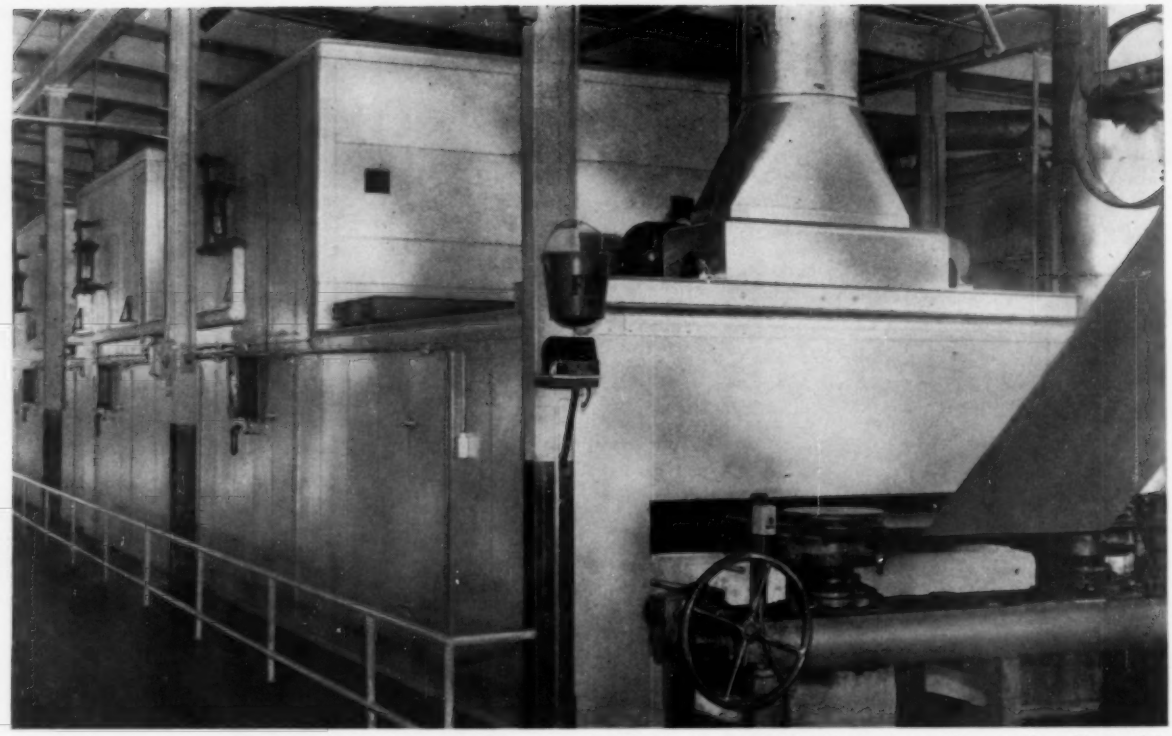


ALUMINIZED STEEL was specified for this tenter dryer housing to provide **protection without paint.**

How Armco ALUMINIZED STEEL Cuts Textile Mill Maintenance

NEEDS NO PAINT . . . OUTLASTS GALVANIZED

Textile dryer housings, ductwork, doors—even entire buildings—last longer, need less maintenance when they're made of Armco ALUMINIZED STEEL Type 2.

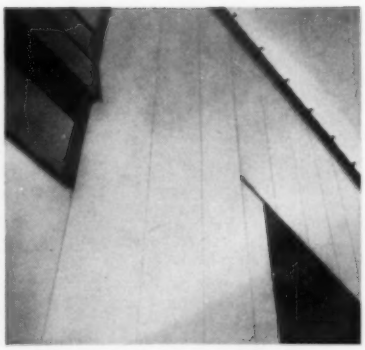
There's good reason. This durable steel has a specially-applied hot-dip coating of aluminum. Eighteen-year tests show that this aluminum coating outlasts a standard coating on unpainted commercial galvanized steel sheets 3-to-1 in the atmosphere. There's no need to paint for corrosion resistance.

For more information about Armco ALUMINIZED STEEL Type 2, just fill in and mail the coupon or call your nearest Armco Sales Office. Ask, too, for information about high quality Armco Stainless Steels, or Armco ZINCGRIP® Steel for textile mill applications.

ARMCO STEEL CORPORATION
1688 Curtis Street, Middletown, Ohio

Send more information about
- ☐ Armco ALUMINIZED STEEL Type 2
- ☐ Armco Stainless Steels
- ☐ Armco ZINCGRIP

NAME_____
TITLE_____
COMPANY_____
STREET_____
CITY_____ ZONE____ STATE_____



These building panels of Armco ALUMINIZED STEEL Type 2 are still attractive after more than three-years' service in an industrial atmosphere.

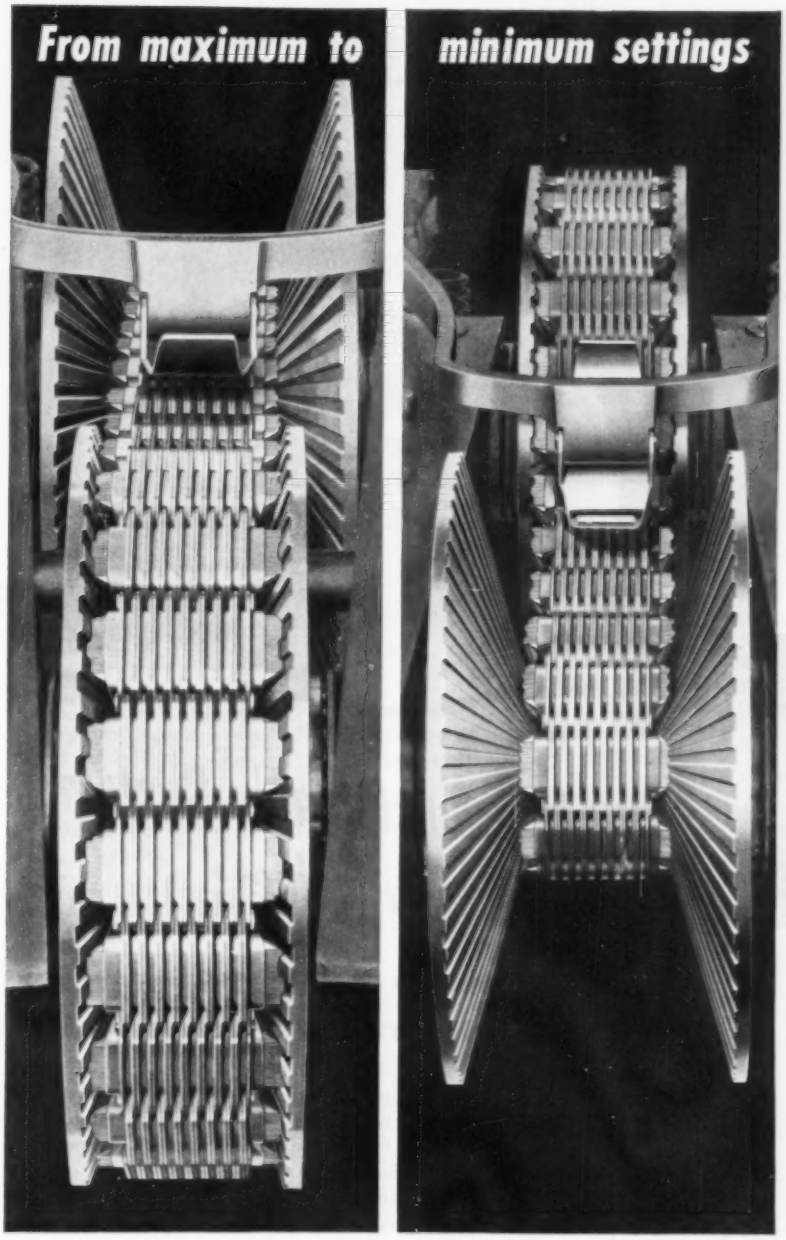
ARMCO STEEL

ARMCO STEEL CORPORATION • 1688 CURTIS STREET, MIDDLETOWN, OHIO

SHEFFIELD DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION

For positive, accurate speed control

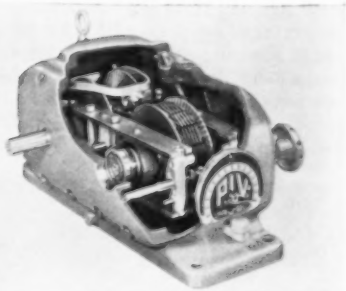
...there's nothing like P.I.V.



VARIABLE from top speed to minimum speed with no steps, no stops in between. That's Link-Belt P.I.V.—the *only* chain-driven variable speed drive. Teeth—not tension—permit instant ratio changes with no loss of speed, regardless of load conditions.

Slippage? Not a chance—P.I.V.'s chain-to-wheel grip is positive as a gear. In fact, this is industry's most accurate, most reliable mechanical variable speed drive.

Your Link-Belt office or authorized stock-carrying distributor has Book 2274 on P.I.V. drives from ½ to 25 hp. Refer to the yellow pages of your local phone directory under Power Transmission Equipment.



HOW P.I.V. WORKS. Exclusive self-tooth-forming chain of P.I.V. consists of packs of free-sliding steel slats which serve as teeth. Chain grips beveled grooves on pairs of conical wheels located on input and output shafts. Speeds are changed by varying the effective diameters of the wheels, as shown at left.

P.I.V. LINK-BELT VARIABLE SPEED DRIVE

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 14.513

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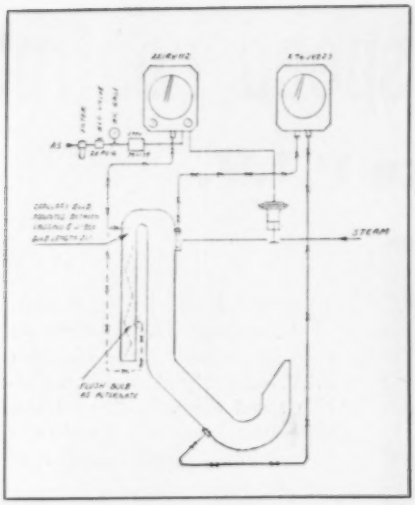
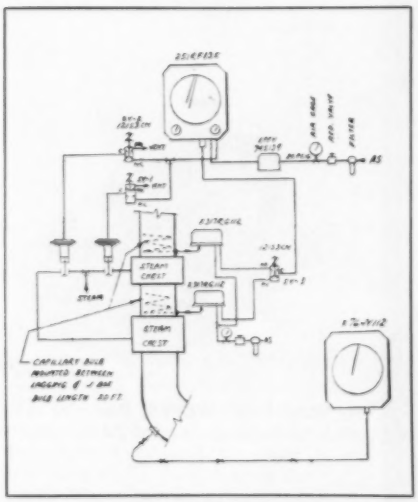
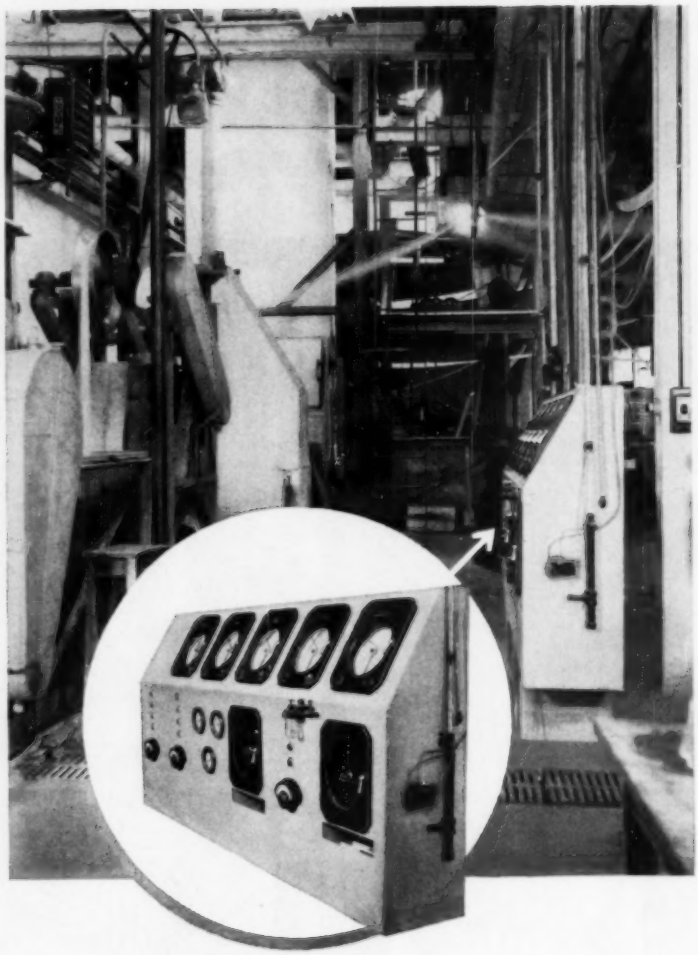


For DuPont J-Box. A vapor-actuated capillary bulb, mounted between the lagging and J-Box heater tube, senses hot spot temperature level of the steam and regulates the control valve accordingly. Setting of this control point maintains the proper amount of steam in both heater and J-Box. You minimize loss of steam. Temperature at the heel of the J-Box, and incoming steam temperature, are both recorded. An electro-pneumatic pilot valve shuts off air to the controller when range is stopped.



For Becco J-Box. Where steam is introduced through steam chests directly into the "J", Taylor TRANSAIRE* Transmitters, with SPEED-ACT*, are located above each chest. One or the other is used, based on cloth level in the "J". Switching is effected manually, by a two position switch which automatically admits steam to the correct chest. A recording controller regulates input steam, and the heel temperature is also recorded, using the flush bulb. The electro-pneumatic pilot valve shuts off controller air when range is stopped.

*Trade-Mark



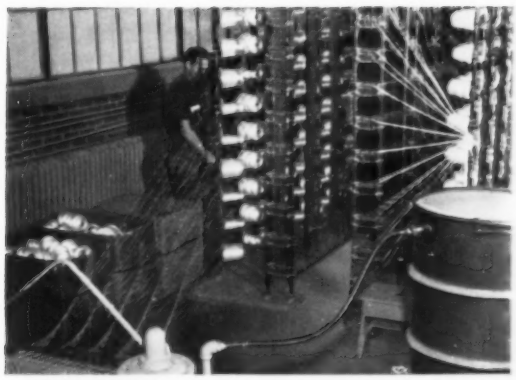
Whichever Bleach System you select...

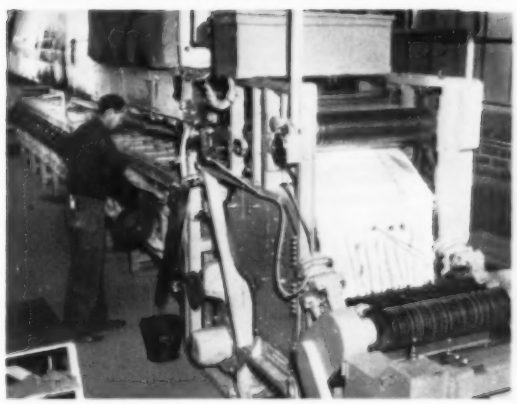
Taylor-made Control Systems give maximum efficiency

Drawings at left show the control systems we've designed for both the DuPont and Becco Bleach Ranges. Pictured above is a typical Taylor central control panel for the continuous bleaching process. Automatic control of continuous bleach J-Boxes gives you definite savings in chemicals and steam, plus more uniform bleaching. The Taylor control systems shown here are simple to operate and maintain and give maximum control efficiency at low cost. For complete details, see your Taylor Field Engineer, or write Taylor Instrument Companies, Rochester, N. Y., or Toronto, Ontario.

Taylor Instruments MEAN ACCURACY FIRST

How V-Belts with the Green Seal save you money





Moneysaving performance is built into every Goodyear V-Belt in exclusive manufacturing processes like those illustrated above. Synthetic fiber cords are impregnated repeatedly with special rubber latex compounds. When treated at a precise tension and temperature for a precise time (the exclusive 3-T process), the cords are stabilized at the point of greatest strength before being built into the load-carrying section of Goodyear V-Belts.

They're dimensionally stable – Exclusive 3-T Cords or unsurpassed steel cables muscle belts that don't shrink or stretch in storage. So matched sets *stay* matched. Down time is cut to a new low.

They're precisely measured – The length you need is the length you get. Mismatching failures are minimized.

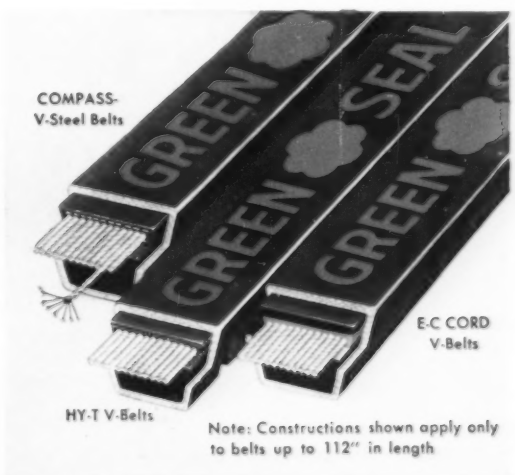
They're high in modulus, low in stretch – Power loss through "creep" is virtually eliminated. Take-ups are few and far between.

They're friction-balanced, non-dusting – Their covers don't grab or stick in the grooves. They run smoothly and cleanly.

They're mildew-inhibited – They're safely stored and operated in high moisture. Stand-by drives always ready when needed.

–AND IT ALL ADDS UP TO

–Maximum trouble-free horsepower hours at minimum cost. It's reason aplenty that you should use only V-Belts with the Green Seal. See your Goodyear Distributor for details. Or write Goodyear, Industrial Products Division, Lincoln 2, Nebraska, or Akron 16, Ohio.



Note: Constructions shown apply only to belts up to 112" in length

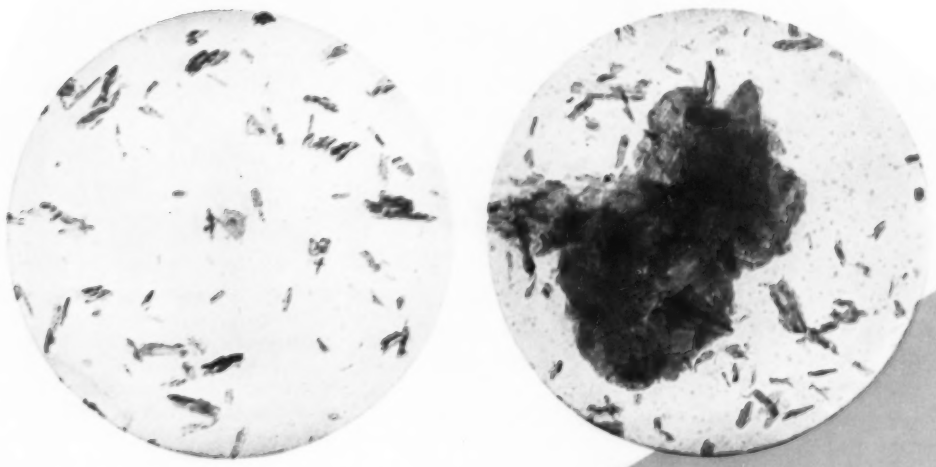
DIMENSIONALLY STABLE V-BELTS with the GREEN SEAL by

GOODYEAR

THE GREATEST NAME IN RUBBER

Compass, E-C Cord, Hy-T, Green Seal–T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

In pigment application a *"particle of difference"* is all the difference in the world!



National® CARBANTHRENE® vat dyes

NATIONAL ANILINE DIVISION

ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK 6, N. Y.

Akron Atlanta Boston Charlotte Chattanooga Chicago Greensboro Los Angeles
New Orleans Philadelphia Portland, Ore. Providence San Francisco Toronto

Successful use of pad-jig and other pigment impregnation methods demands vat dyes that give you uniform, ultra-refined particle size for maximum dispersibility.

The "new" CARBANTHRENES were designed specifically to meet the need.

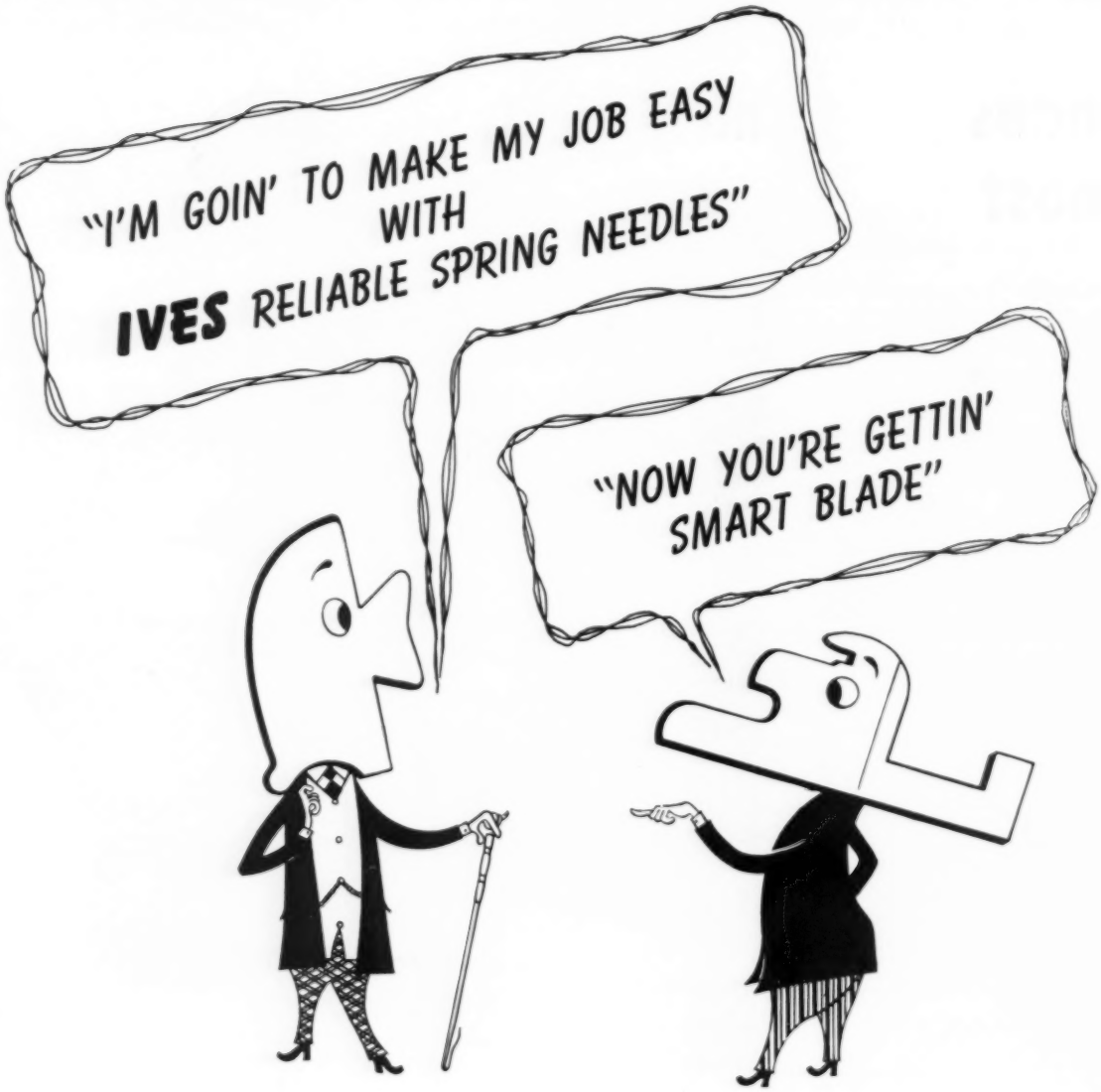
With these outstanding dyestuffs, clean, level shades are reproducible time after time. Speckiness in padding and uneven build-up in packages are minimized. Seconds, rejects and re-dyes are fewer. Dye yields are often increased. And the dyes are easier to handle in storage as well as in processing.

The specially refined CARBANTHRENE Vat Dyes were introduced one by one as a result of new manufacturing techniques developed at our Buffalo Research and Engineering Center Today the CARBANTHRENE line includes a full range of dyes ideally suited to modern vat dyeing and printing methods.

Your National Aniline representative will gladly work with you in applying CARBANTHRENES in your own processing.

Photomicrographs (x 20,000) show improved uniformity of modern Carbanthrenes® (left) over old prototypes (right).

Allied Chemical



IVES NEEDLES AND PARTS

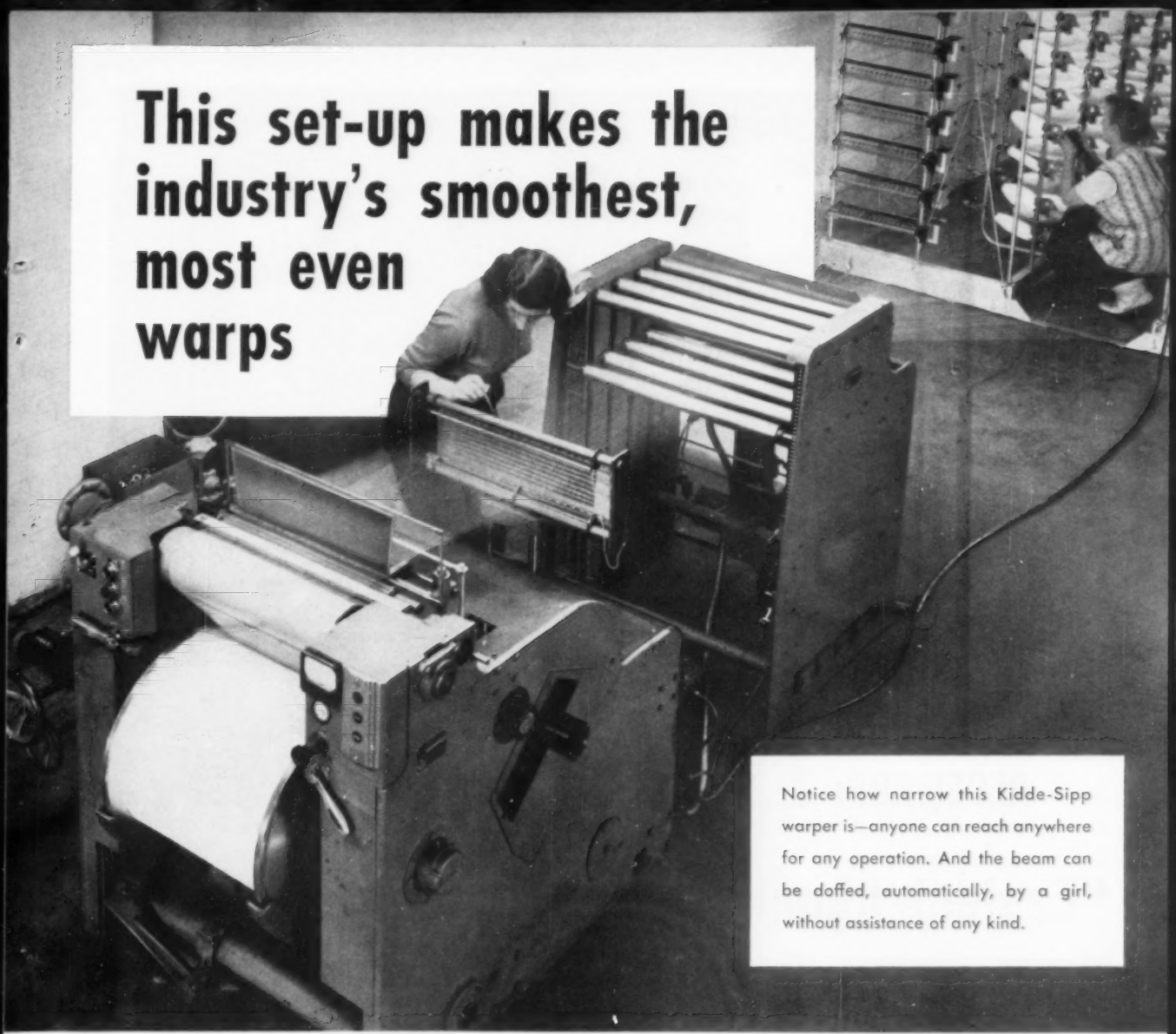
are exactly engineered and precision manufactured for all types of knitting machines. All IVES needles and parts are smoother and specially hardened and tempered of longer wearing Vanadium steel. When you're asked about needles, sinkers, sliders or replacement knitting parts insist on IVES. . .
86 years in-the-mill on-the-job performance backs your judgment.

Write, wire or phone CHarter 9-0396

THE LOYAL T. IVES CO., INC.

NEW BRUNSWICK, N.J.

This set-up makes the industry's smoothest, most even warps



Notice how narrow this Kidde-Sipp warper is—anyone can reach anywhere for any operation. And the beam can be doffed, automatically, by a girl, without assistance of any kind.

it's the KIDDE-SIPP warper with accumulator and creel

The smoothest, most even warp beams available today are being turned out by Kidde-Sipp warpers . . . particularly when backed up by a Kidde-Sipp accumulator and a Kidde-Sipp Creel. Here's why:

Yarn is never scuffed on the warper because brakes on the measuring roll, compression roll, and beam are all synchronized electrically. Furthermore, yarn builds up evenly because the compression roller has 2 hydraulic cylinders, one at either end (instead of just one in the center). The balanced pressure that results gives you perfectly even build-up of yarn. And the hydraulic cylinders produce uniform cushion pressure so that the compression roller will not chatter or bounce.

The accumulator is electrically synchronized with the warper, so that, when the yarn must be backed off to recover a broken end, proper tension is maintained. And even the heaviest packages won't sag out of alignment on the versatile Kidde-Sipp Creel. New, stronger package holders and adapters are the reason. They are made of aluminum, which also puts a stop to rust rubbing off on the yarn.

There are a lot more reasons why you get a better beam with Kidde-Sipp Warpers, Creels and accumulators. Find out more about them by writing to:

TRICOT AND RASCHEL MACHINES • TRICOT WARPERS • HORIZONTAL WARPERS • BEAMERS
CREELS • SLASHERS • WINDER-REDRAWS • TENSOMETERS • TENSION COMPENSATORS

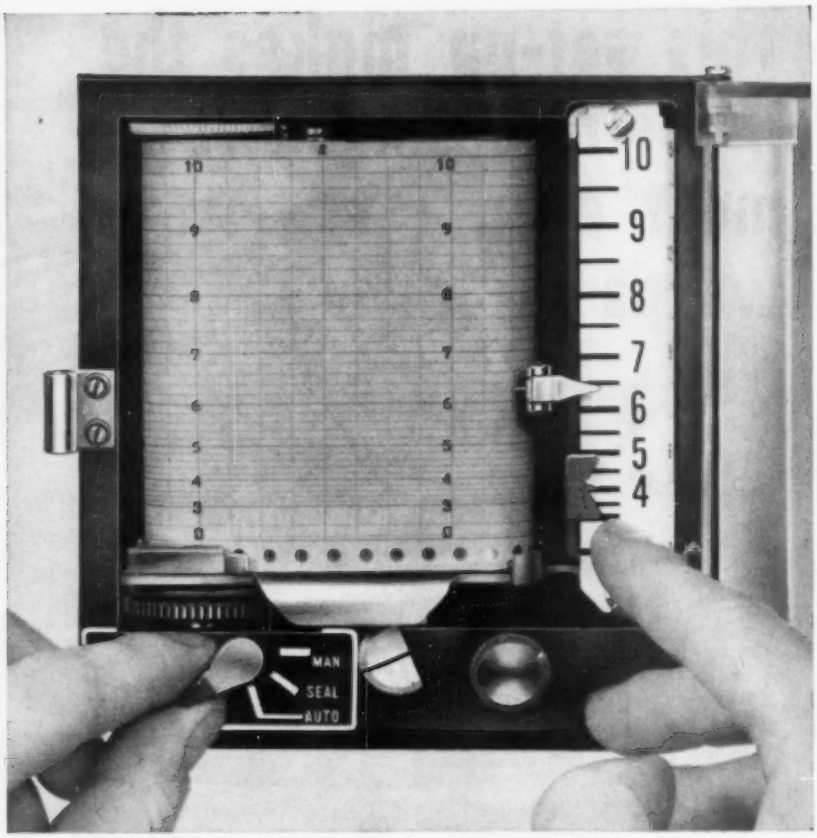
Kidde

TEXTILE MACHINERY CORPORATION — BLOOMFIELD, NEW JERSEY

SOUTHERN OFFICE — JOHNSTON BUILDING, 212 SOUTH TRYON ST., CHARLOTTE, N. C.

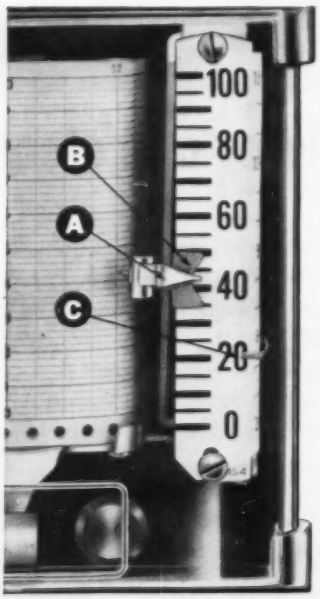
The word KIDDE is the trademark of Walter Kidde & Company, Inc., and its affiliated companies.

One of 38 Metagraphic Receiver Models you can choose from, all with only 5" x 5¼" panel. This model has single-knob, six-position transfer station for completely "bumpless transfer" in cascaded control systems.



BRISTOL METAGRAPHIC RECEIVERS:

"Easiest 'bumpless transfer' you ever saw"



Variable (A), set point (B), and valve position (C), all on same scale, make manual-automatic transfer easy.

That's what instrument men say after trying the Bristol Metagraphic Pneumatic Receiver—even in cascade control systems.

Just seal, match pointers, transfer. There's not a single value to read. That's because the Metagraphic gives you valve position, set point and measured variable —*all on the same scale.*

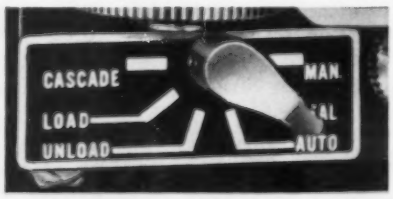
No finger-disconnects here! The Metagraphic is a true plug-in receiver—plugs and unplugs in 5 seconds with no loss of automatic control.

You can switch from indicator to recorder in less than 10 seconds, interchange many receiver models, change range simply by changing chart. Cuts down on costly reinstallations if process requirements are changed.

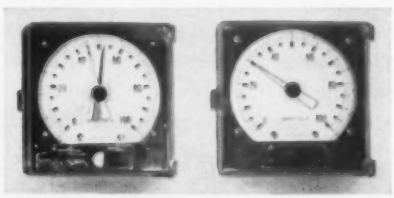
Write today for the complete Metagraphic story. Don't forget, Bristol offers the widest selection of miniatures on the market. (Full sized instruments, too.) The Bristol Company, 103 Bristol Road, Waterbury 20, Conn. E-19

BRISTOL TRAIL-BLAZERS IN PROCESS AUTOMATION

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS



Six-position transfer station (enlarged view) for cascade service. Three-position manual-automatic station is also available.



Metagraphic Indicating Receivers have full 9-inch scale for easy reading; feature complete 10-second interchangeability with recorders.

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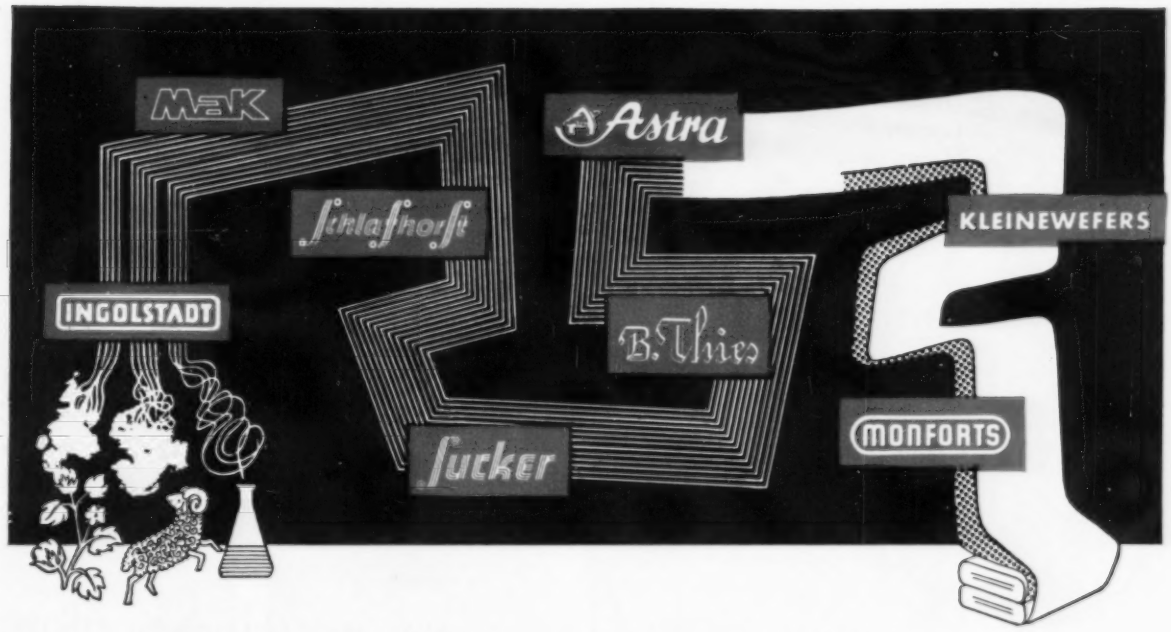

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ASTRA Weaving Machines for cotton-, wool- and special fabrics e. g. feltcloths · Jacquard-weaving Machines
KLEINEWEFERS Calenders · Mangles · Printing-, Mercerizing machines · Continuous Bleaching and Dyeing Plants
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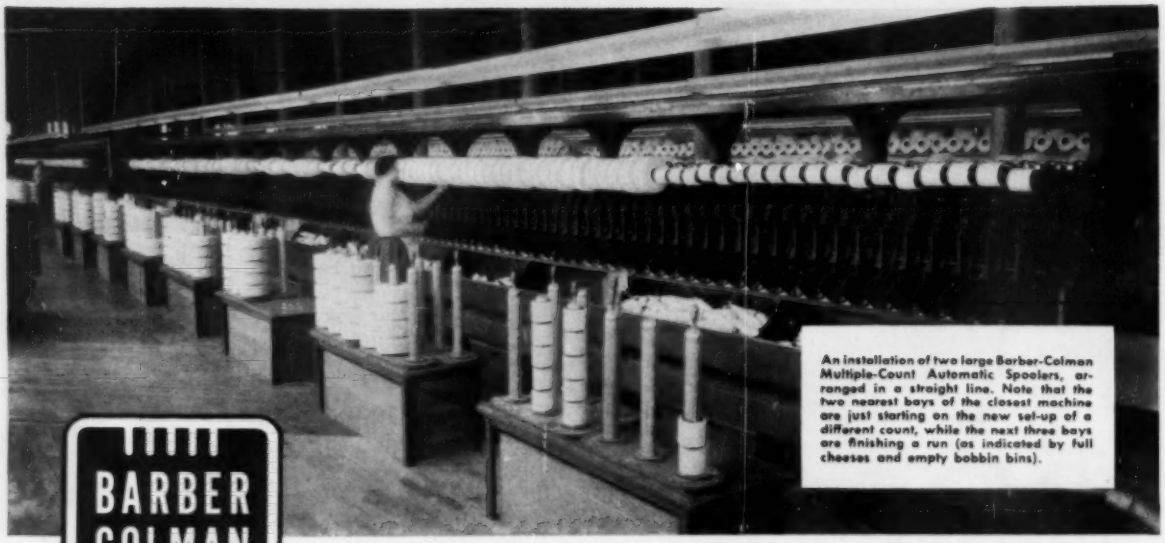
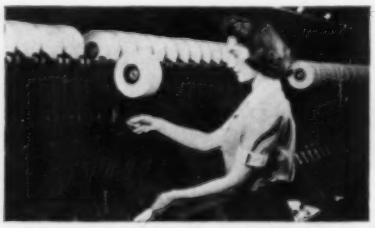


An installation of two large Barber-Colman Multiple-Count Automatic Spoolers, arranged in a straight line. Note that the two nearest bays of the closest machine are just starting on the new set-up of a different count, while the next three bays are finishing a run (as indicated by full cheeses and empty bobbin bins).

BARBER COLMAN

Multiple-Count Automatic Spooler



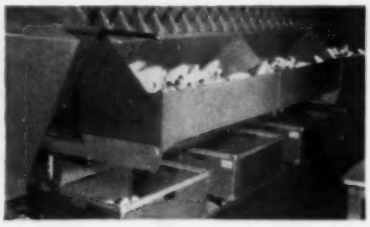
Spooler tender loading a full bobbin into the Spooler. The bobbin is dropped into a "pocket," and the yarn end is slipped into a spring clamp which positions it properly for the knotter to pick up.

Yarn man moving a trident of full cheeses from operator's table to a creel truck. He also returns tridents of starters, removes boxes of empty bobbins, and keeps full-bobbin bins supplied. Boxes under operator's tables are for tailings, and cheeses to be rewound.

Sale yarn mills and producers of piece goods that use various counts or different mixtures will find that this machine can be a very profitable investment. It is still the famous and the very familiar Barber-Colman Automatic Spooler, but with this difference: now you can wind . . .

A DIFFERENT COUNT EVERY NINE UNITS

The machine is built in "bays" between uprights that support the traveler track, with nine bobbin-to-cheese winding units on each side of each bay. Empty bobbins, instead of being conveyed to a single sorting table, drop into separate boxes under each bay, thus enabling each group of nine units to be used for a different yarn count. Individual operator tables service each bay. The only limitation is that the extremes of different counts on the machine at any one time must fall within the range of the knotter in the traveler. Yarn or count changes can, of course, be readily made at any time, and any number of bays can be run on identical yarns.



A close-up of the full-bobbin supply bins which are fixed to the machine, one bin for each nine winding units. The removable empty-bobbin boxes are shown on the floor below, also arranged so there is one box for each nine units. Note box location guides.

A close-up of several full-bobbin bins showing how dividers can be used to mark off separate runs. Labels tell contents.

AUTOMATIC SPOOLERS • SUPER-SPEED WARPERS • WARP TYING MACHINES • WARP DRAWING MACHINES

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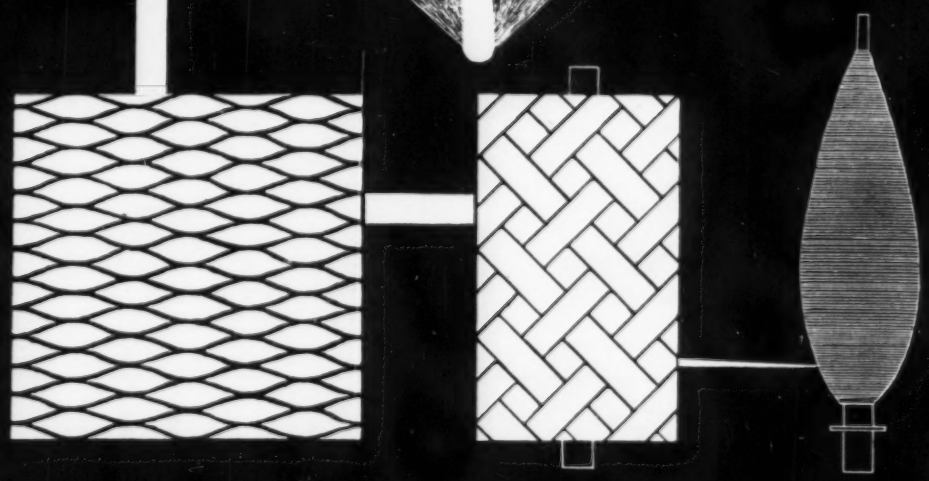
INGOLSTADT



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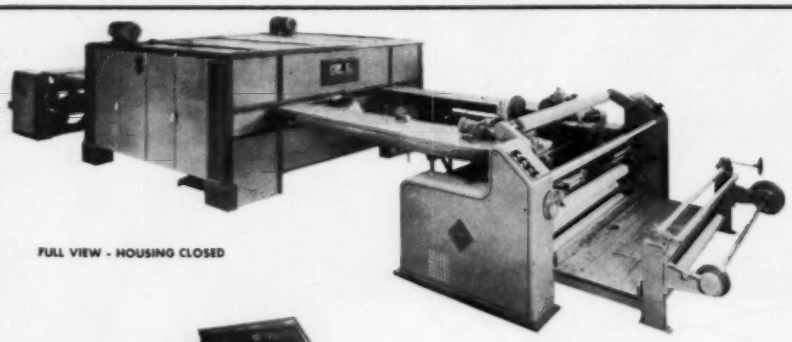

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The very latest in simplified maintenance. You can readily open the housing and have unhampered access to all parts you want to service or clean. It's a matter of minutes!

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AND HERE IS MORE PROGRESS NEWS:

The newly designed FAMATEX OVERFEED AND SHRINKING APPARATUS permits fabric guidance at pin operation with any overfeed ratio to speeds up to 240 yards per minute, even if goods should have poor selvedges. No more selvedge slipping, hence no more costly machine stoppage due to faulty feeding mechanism. No more squeeze pleats, but only uniform, clean selvedges.

For more details about these and other FAMATEX machines please contact us. Our sales engineer will glady discuss any pertinent problems with you.

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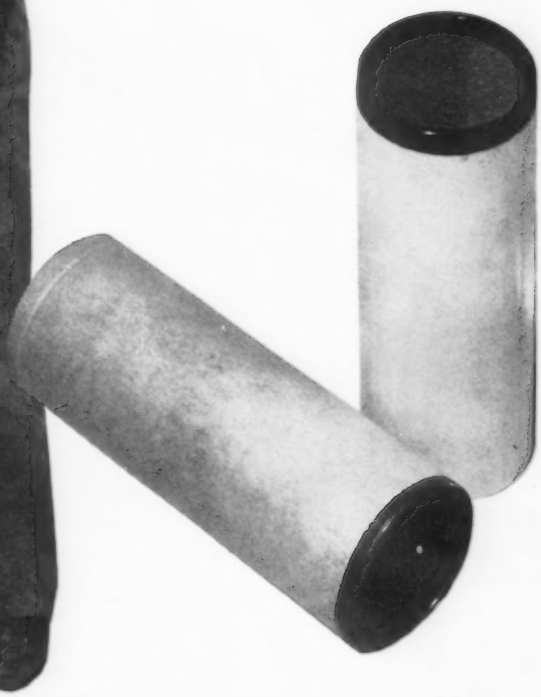
To develop a product that delivers peak performance in production, research is a "must" . . . and Sonoco does it!

For example, Sonoco up-twister, or creeling, tubes are made for top operational efficiency on your machines. They are job-engineered to meet the requirements of balance, take-off and other yarn carrier functions in winding, twisting and creeling.

Every Sonoco product is backed by nearly 60 years of experience in the development of paper carriers to serve the industry with maximum efficiency and economy. For you, the use of Sonoco-researched products mean more profitable production!



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with HERR Conical Rings and Flyers!

For 6 oz. Wool and Dacron Blends

5/16" Face Conical Ring. The most popular ring to produce light count yarns at high spindle speeds.

Extra-light-weight bobtail.

Four-arm short brass or aluminum base with balance bail wire.

For Medium Counts

3/8" Face Conical Ring for worsted, orlon, nylon, dacron and blended yarns of all types.

Two-arm, light, long aluminum base.

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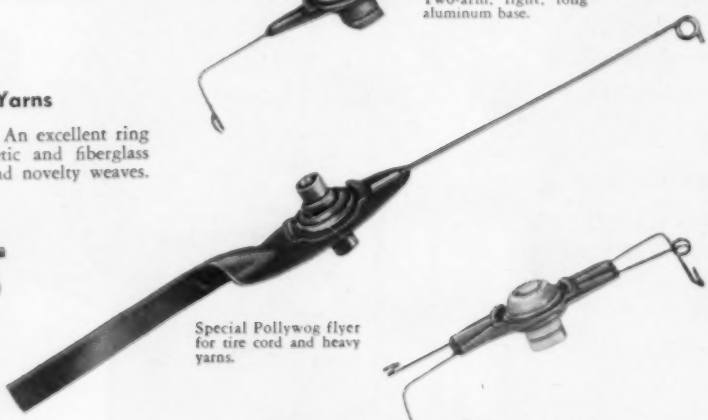
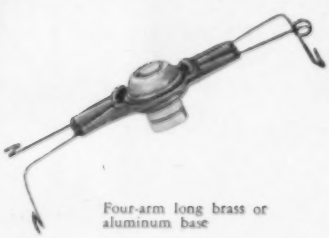
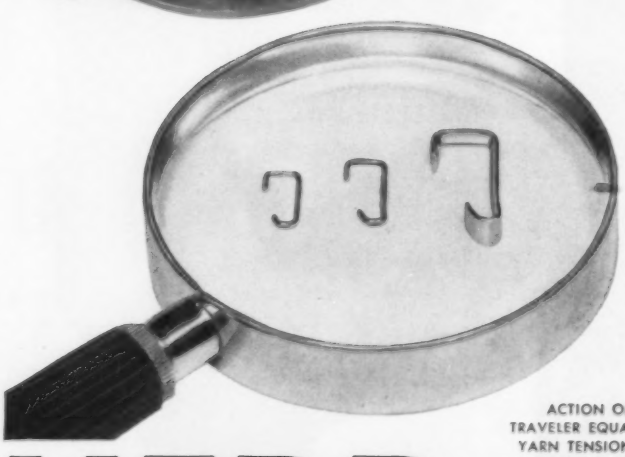
43/64" Face large diameter Conical Ring. An excellent ring for spinning and twisting wool, synthetic and fiberglass yarns for carpeting, tire cord, woolens and novelty weaves.



Special Pollywog flyer for tire cord and heavy yarns.



Four-arm long brass or aluminum base



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Special Flyers for Helanca and Stretch Nylon Yarns

Better yarns at higher speeds are the rule with Herr Conical Rings and Herr Flyers. Clean, smooth yarns, heavier doffs, less yarn breakage, fewer knots. Designs of flyers and travelers have been worked out for handling synthetics and blends.

Your problems will have the immediate attention of the Herr technical staff. Write or phone today.

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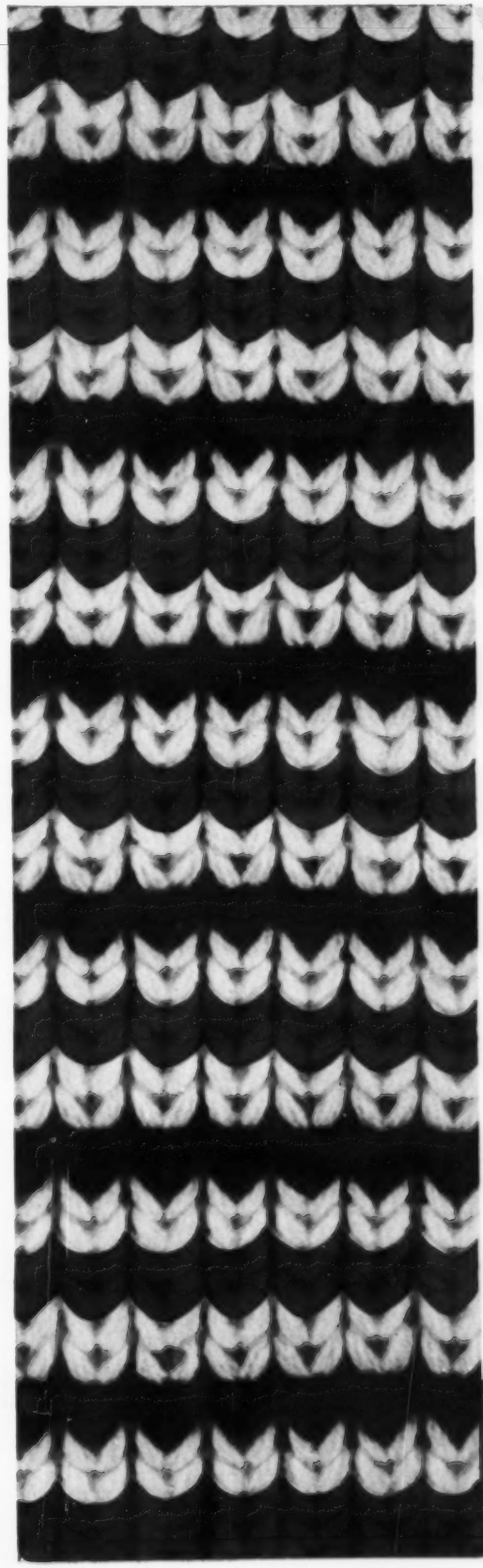

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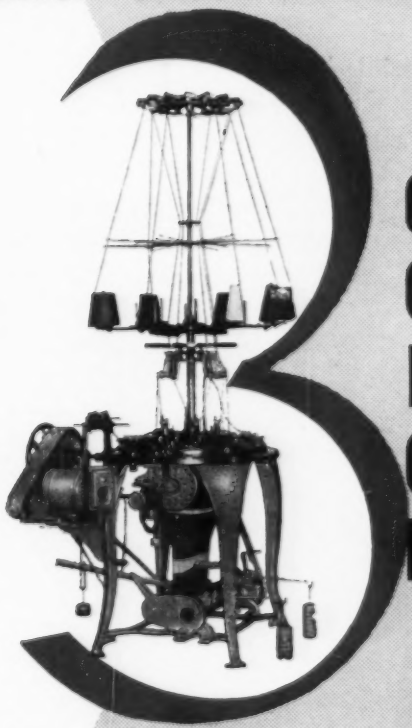

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ACTUAL SIZE STITCH IN 3 COLORS KNIT ON LEIGHTON'S . . . COARSE GAUGE MACHINES

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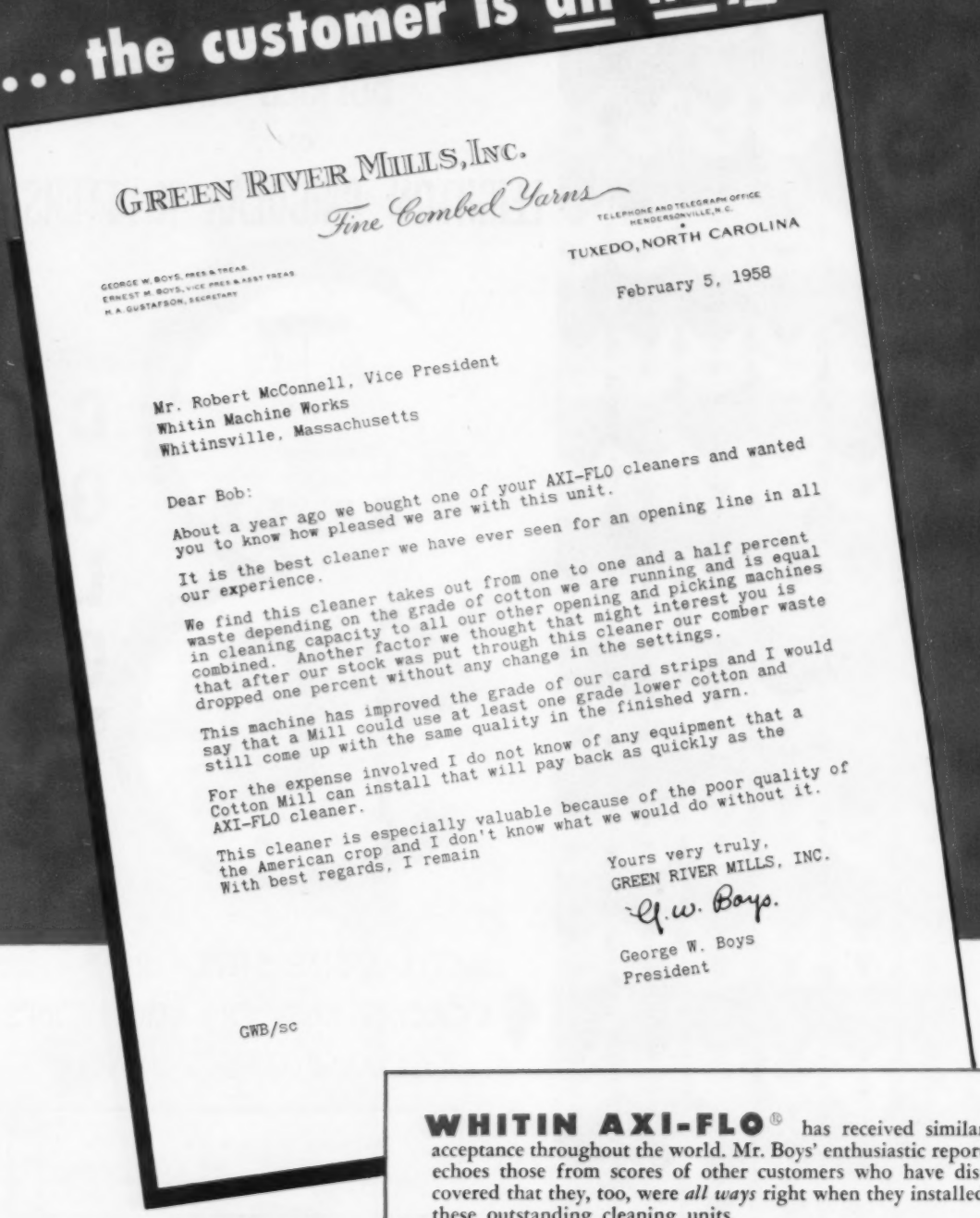
...the customer is all ways right!



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Fine Combed Yarns

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M. A. GUSTAFSON, SECRETARY

February 5, 1958

Mr. Robert McConnell, Vice President
Whitin Machine Works
Whitinsville, Massachusetts

Dear Bob:

About a year ago we bought one of your AXI-FLO cleaners and wanted you to know how pleased we are with this unit.

It is the best cleaner we have ever seen for an opening line in all our experience.

We find this cleaner takes out from one to one and a half percent waste depending on the grade of cotton we are running and is equal in cleaning capacity to all our other opening and picking machines combined. Another factor we thought that might interest you is that after our stock was put through this cleaner our comber waste dropped one percent without any change in the settings.

This machine has improved the grade of our card strips and I would say that a Mill could use at least one grade lower cotton and still come up with the same quality in the finished yarn.

For the expense involved I do not know of any equipment that a Cotton Mill can install that will pay back as quickly as the AXI-FLO cleaner.

This cleaner is especially valuable because of the poor quality of the American crop and I don't know what we would do without it.

With best regards, I remain

Yours very truly,
GREEN RIVER MILLS, INC.
G. W. Boys.
George W. Boys
President

GWB/sc

WHITIN AXI-FLO® has received similar acceptance throughout the world. Mr. Boys' enthusiastic report echoes those from scores of other customers who have discovered that they, too, were *all ways* right when they installed these outstanding cleaning units.

Write today for folder giving complete details.

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Whether you need regular cartons by the thousands or engineered packaging, call your nearby Gaylord man.

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Gaylord Boxes

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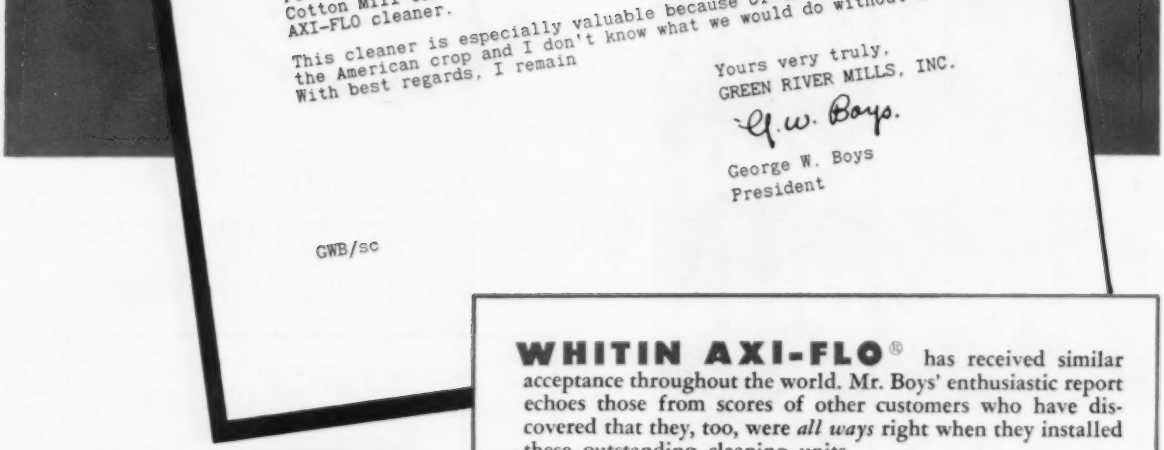
PLANTS COAST TO COAST

DIVISION OF **Crown Zellerbach Corporation**



Cotton Mill
AXI-FLO cleaner.

This cleaner is especially valuable because
the American crop and I don't know what we would do without
With best regards, I remain

Yours very truly,
GREEN RIVER MILLS, INC.

George W. Boys
President

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WHITIN AXI-FLO® has received similar acceptance throughout the world. Mr. Boys' enthusiastic report echoes those from scores of other customers who have discovered that they, too, were *all ways* right when they installed these outstanding cleaning units.

Write today for folder giving complete details.

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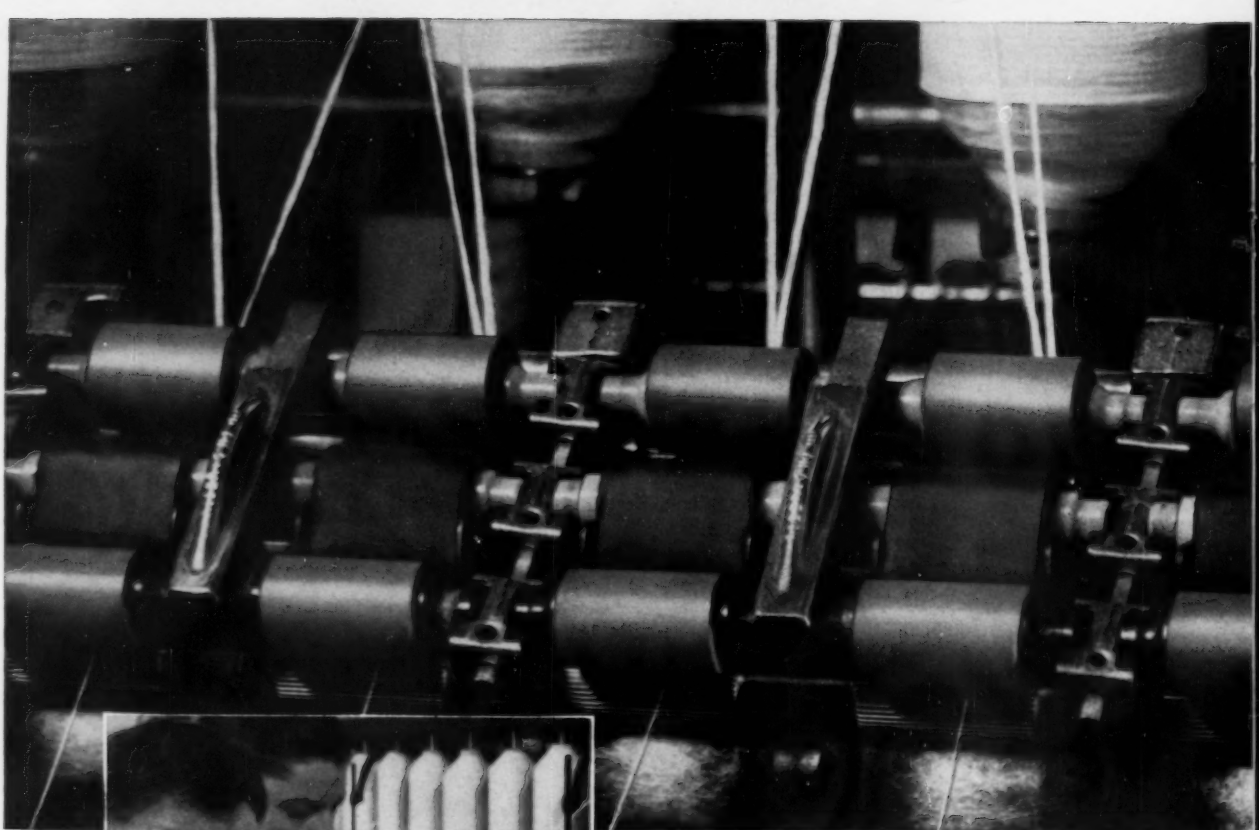
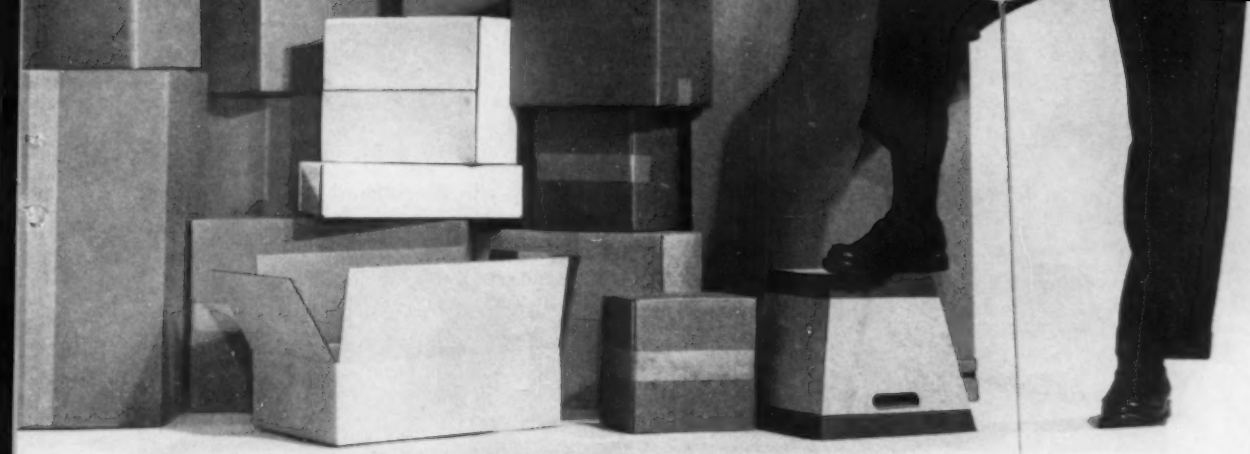


How Armstrong



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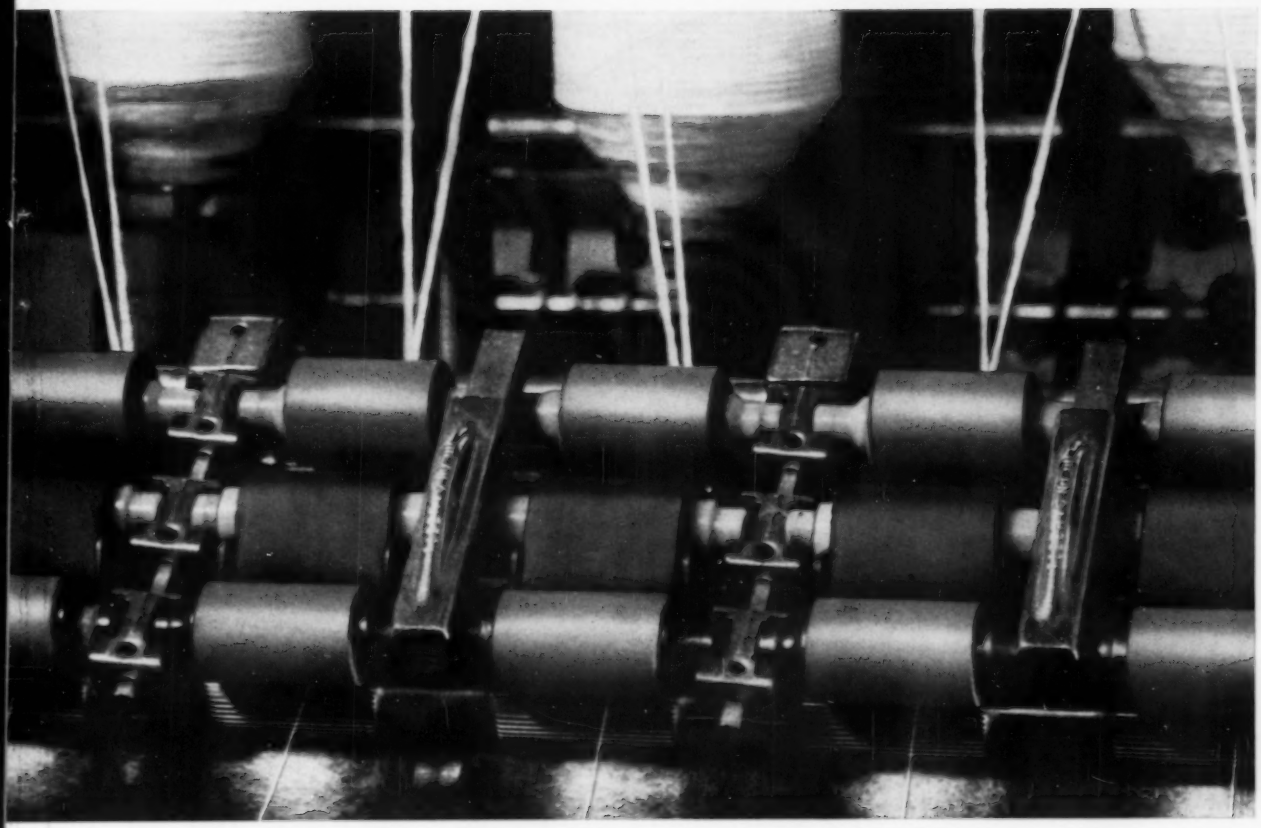
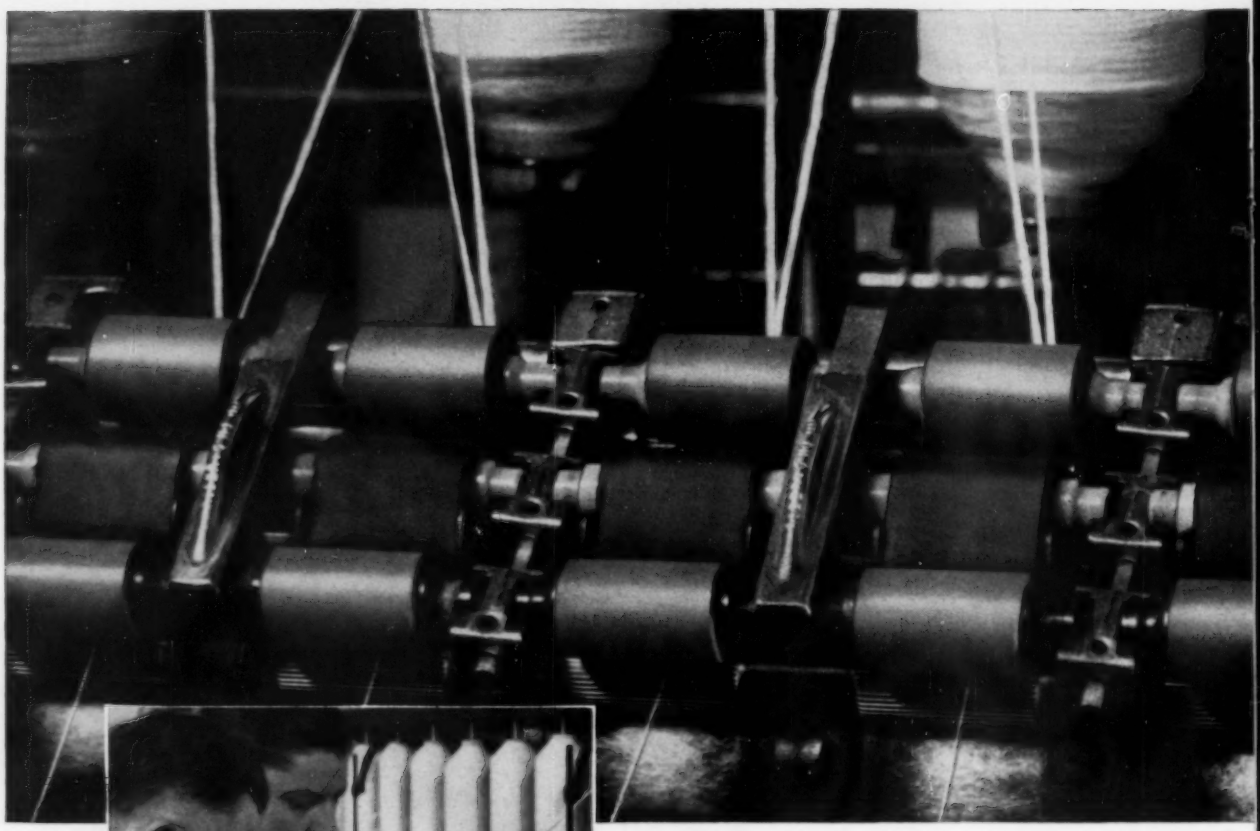
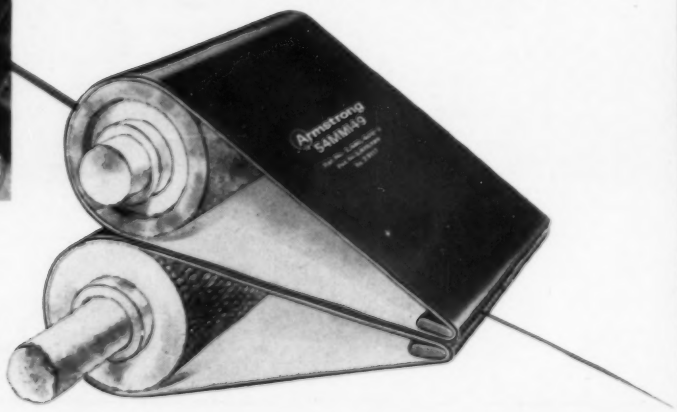


Accotex Aprons help produce



How Armstrong

For double-apron spinning, use the black-and-white Accotex NO-7075 Apron. No matter what type of equipment you're using, there's an Accotex Apron specifically engineered for your needs.



Smooth-running Armstrong Accotex Aprons help keep production at peak quality. Constant control of the fibers results in fewer irregularities and greater yarn strength.

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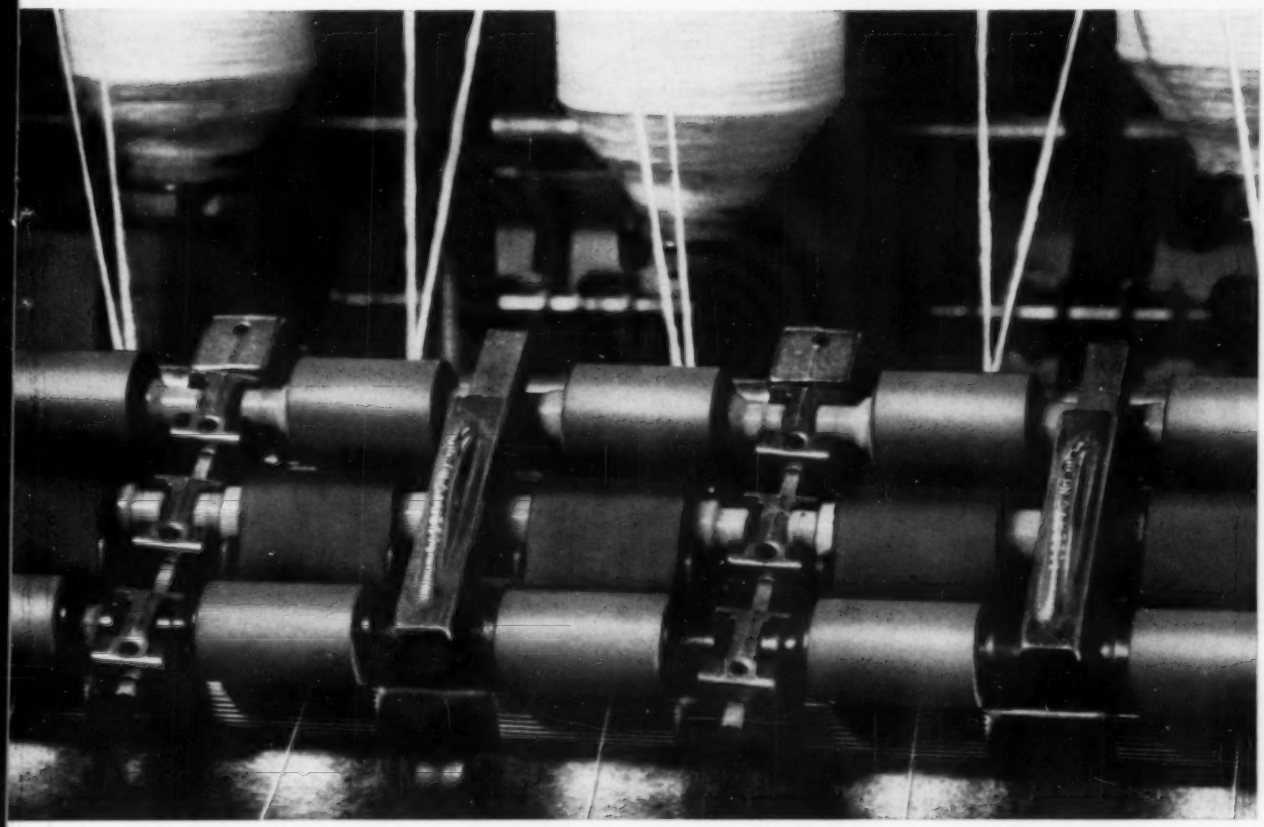

Accotex Aprons help produce stronger, more uniform yarn

To get the good yarn control so essential to top-quality spinning, hundreds of mills have standardized on Armstrong Accotex Aprons.

These aprons are precision made to provide smooth drafting action on modern, high-draft frames. In the Accotex NO-7075 black-and-white apron, for example, there are different synthetic rubber compounds on each surface.

The black outer surface has sufficient friction to keep the top apron spinning smoothly without slipping. It also resists abrasion and tearing, to give long trouble-free service even on a three-shift operation.

The inner surface has a relatively low coefficient of friction to avoid buckling and jamming at the pin. At the same time, it has enough friction to grip the drive roll firmly for smooth, even drafting.

The patented straight-line cord interliner between these two rubber surfaces keeps the apron running smooth and flat, won't let it stretch or curl.

For more information on Accotex Aprons or other Armstrong textile supplies, write Armstrong Cork Company, 6404 Dauphin Street, Lancaster, Pennsylvania.

Armstrong ACCOTEX APRONS ... *used wherever performance counts*

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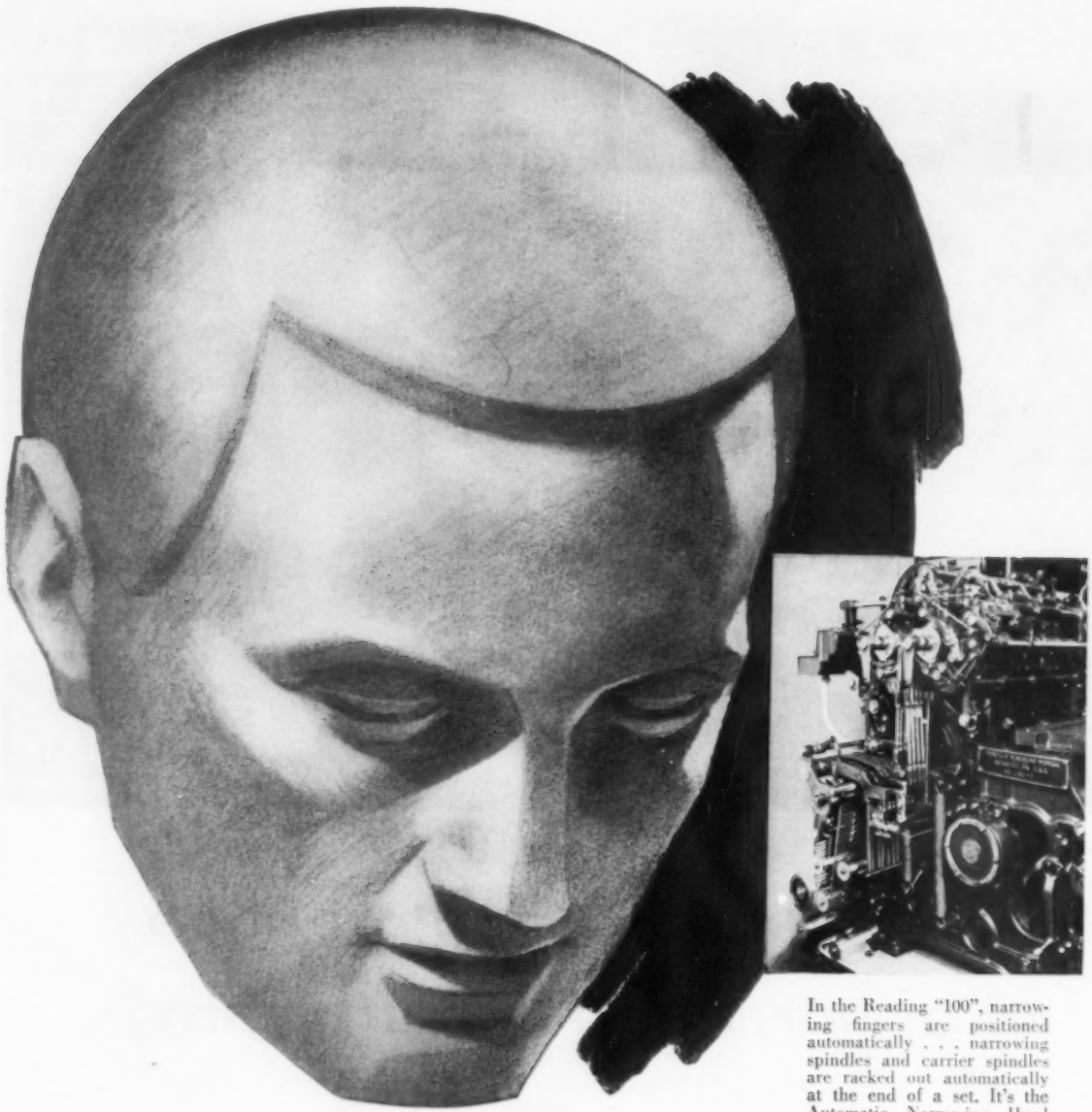

In the Reading "100", narrowing fingers are positioned automatically . . . narrowing spindles and carrier spindles are racked out automatically at the end of a set. It's the Automatic Narrowing Head feature of . . .

the machine that almost thinks for itself

Builders of:
The "Reading" CK-A
Circular Knitting Machine
The "Reading" Tricot Machine
The "Reading 100"
Full-Fashioned Knitting Machine
The "Reading" Full-Fashioned
Outerwear Machine
The "Reading" Braiding Machine
Textile Spring-Beard Needles
Arrow Latch Needles

The mill-proved Reading "100" is just about the nearest thing to a completely automatic machine as is possible in full-fashioned knitting. Every motion is automatic — and closely controlled — to assure continuous, uninterrupted production of superior-quality stockings at lower per dozen costs, and to make it possible for an operator to earn more money. Let us give you the mill-proved Reading "100" story.

The "READING 100"
Full-Fashioned Knitting Machine

Knitting Machine Division
TEXTILE MACHINE WORKS, READING, PENNA.
Reconditioning Plant at Asheboro, N. C.
Builders of Textile Machinery Since 1900

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No Depression in Sight

Once a scare has passed, it is hard to remember just how bad it was. But it seems to us that the talk of a depression is worse now than it has been at any time since World War II.

Last month the unemployment figure for mid-February was given as 5,173,000, said to be the highest in 16 years. And immediately politicians and newspapers with strong political leanings began to make a great deal of hay with it.

Before we try to swap the family's second automobile and latest air conditioner for a mule and plow to help weather a 1933-vintage depression, let's take a look at a few facts.

How Bad Is It?

First, unemployment averaged 4.2% of the total work force for the 11-year period 1947-57. It reached its highest points in 1949, when it was 5.9%, and in 1954, when it was 5.6%.

The 5,173,000 unemployed in February represents 6.7% of the total work force—only 2.5% more than the 1947-57 average.

For the 10-year period 1930-39, the average was 18.2%, almost three times the present figure. At its worst in 1932 and 1933, unemployment came close to 25% of the work force, almost four times present unemployment.

And how bad is it for the unemployed now?

Bad enough, certainly. But nowhere approaching as bad as in the 1930's. Actually, 3.3-million of the 5.1-million are getting unemployment compensation. And the amounts received in most cases will support a standard of living considerably higher than a job during the Depression would support.

In addition, large numbers of retired people and dependents of wage earners are receiving millions of dollars in Social Security benefits. There was no such thing during the Depression.

Why All the Noise?

No one in his right mind wants to see workers unemployed nor our remarkable postwar prosperity slacken. But if things are no worse than the above facts show them to be, why is so much noise about a depression being made?

The answer is mostly political. This is an election year, and the Democrats are not going to let anybody forget that "the Republican party is a depression party." War and depression are the strongest campaign material there is. So you can look for the Democrats to pounce on every hint of anything even suggesting recession or depression from now until the elections next fall.

Pictures will be painted in big black strokes. For example, Sen. Gore (Dem.) of Tennessee is reported to have said, "I am surprised and disturbed to find approximately ten percent of the people in the country standing in lines for distress distribution of food. That is as bad as anything I can remember during the depression of the '30s." Could anybody exaggerate more?

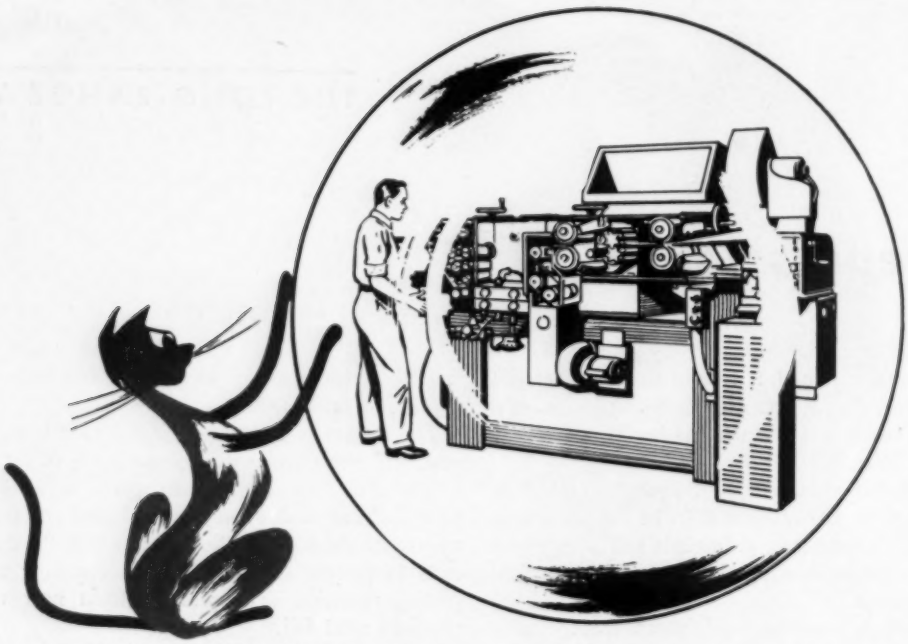
And Vice President Nixon, also playing politics and trying to beat the Democrats to the draw, called a hurry-up press conference to announce that he favored a tax cut to help restore prosperity—another extremely popular campaign topic. Only the naive would think that Nixon didn't know full well that his party had no intention of pushing for a tax cut or that Eisenhower was not going to put the brakes on tax-cut talk the next day.

Depression Is Unlikely

In spite of the tremendous amount of dust that will be kicked up by politicians trying to outpolitick their competitors, there will be no depression in the near future approaching the one of the 1930's.

Important cushions such as unemployment insurance and Social Security benefits are already built into the economy. But world politics is the real clincher. No matter how bad politicians want to win or keep office, there will not be a repetition of the Congress-vs.-the-Administration deadlock that paralyzed the country in the early 1930's. The fear of Communism will take care of that.

O. M. Thomas



Your Future in Textiles . . . and the TURBO STAPLER

The impressive success of Turbo High-Bulk Yarns has made the Turbo Stapler a must in determining the possibilities of all man-made fibers — those in production and those still in the laboratory. That's why you'll find Turbo Staplers as important research tools with leading synthetic fiber producers.

When desired, the Turbo Stapler can alter tow's characteristics in every respect except chemical composition. If you're working, or dreaming with synthetics, Turbo's extensive facilities are available to help you in experimental work on new fibers . . . new fiber effects . . . or new characteristics for your present fibers.

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LANSDALE, PA.
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Textile World

VOLUME 108, NO.4. APRIL, 1958

ASQC Surveys Latest QUALITY-CONTROL METHODS

- The annual meeting of the Textile Div., American Society for Quality Control, was held this year at Clemson, S. C.
- Papers covered the latest methods of applying quality control in cotton mills, worsted mills, and knitting mills.

Quality-Control System Uncovered Personnel Troubles

By **LANE C. DRYE,** Linn Mills Co.

We started to install a quality-control program in our mill in 1953 when rumblings from our customers made us realize we had been too complacent about quality. While we expected to find most of our problems centered around the quality of our cotton and the condition and organization of our machinery, we discovered that the root of our problems lay in the performance of our supervisory and operating personnel.

Overseers at each mill had formerly done their own physical testing; but now we have our own laboratory equipped with controlled temperature and humidity conditions, evenness tester, quadratic integrator, spectrograph, Varimeter, yarn-tension analyzer, and other testing instruments. The laboratory is staffed by a full-time technician.

Mill personnel continue to make daily size tests, but the routine tests prescribed by the sampling program are made in the laboratory. The sampling plan is designed to be accurate with a 3% sampling error with a 1% sampling risk.

Prior to 1953, cotton had been classed for staple, leaf content, and color. Today, we also consider fineness, maturity, and tensile strength. We do Micronaire tests on each bale of cotton, and Pressley tests are made on a spot basis.

Floor Space Was Increased

Floor space was almost trebled in the opening operation to permit opening of high-density bales 24 hrs. ahead of their use. Instead of 20 bales for our mix, we now blend from 60 bales simultaneously. Production rates were reduced by one-half.

Picking equipment consists of three-beater pickers with blending reserve. A maintenance program reduced maximum variation of picker laps from 18% to 8%, with a range of 1 oz. yard-to-yard variation in a 55-lb. lap.

Standardized settings and schedules among card grinders reduced foreign-material count to 13 to 18 per 100 sq. ins. of card web. Flats are now ground on a 3-to-1 ratio with the other card clothing. Laying picker laps on alternate cards and the vacuum stripping of alternate cards on a 2-hr. cycle has lowered the variations between cards and reduced thick and thin pieces.

Comber preparation is now done on a drawing-lap-winder combination. New combers have improved quality and reduced noil 2%. Production is 50 lbs. per hr. on combers.

All spindles were changed from conventional Casablancas to double-apron Super-Draft as a result of early tests. Ball-bearing spindles with balloon control rings, lint-free creels, and no-oil center-suspension top rolls were specified on the 30,000 spindles put in since 1953.

Supervisory Changes Were Made

We established a superintendent at each plant in charge of all departments and shifts. Overseers were placed on an incentive by paying them on a basis of performance.

We corrected the previous situation where the superintendent had been doing the overseer's job, the overseer had been doing the foreman's job, and no one had been doing the front-

line foreman's job of supervising operators.

Operators' jobs were evaluated, and their base pay rates were adjusted according to their skills. We organized training methods, introduced discussion techniques, and used colored movies.

We also bought a circular knitting machine to show operators the effects of trying to knit yarns in which we had deliberately made every yarn defect that would come from that operator's department.

These measures have lifted morale, renewed pride in our operators' work, and given them a feeling of job security.

Quality Information Is Screened At Berkshire Hathaway

By K. V. CHACE, Berkshire Hathaway, Inc.

Management wants to be bothered as little as possible when quality is in control but warned with alarm when quality goes out of control. We investigate sources of quality information and screen them before passing them on to management.

These sources of information come from (1) results of routine testing of the product in process, (2) results of routine testing of the final product, (3) results of routine inspection of the final product, (4) results of investigations of changes in equipment, processes, and methods, and (5) customer complaints.

We request from management an expression of the frequency and accuracy of the routine testing figures. We use a normal sample size of four for convenience. Statistical control limits are then provided using average and range as measured variables.

Our basic control points for controlling yarn numbers in the combed-yarn mill are finisher drawing, roving, and spinning. We keep the control charts for averages and ranges on each of the routine tests being run. The results of the daily tests are sent to a central laboratory and kept on control charts.

These charts are checked by management biweekly. We found that tabulated reports cannot be substituted for graphs. A biweekly report is also issued to management that shows average yarn numbers, average range of yarn numbers, average skein breaks, and average strength factor of each yarn tested.

Year-End Summaries Are Made

Summaries are made at the end of each year and new control limits are figured.

Final product testing is done on

CONTINUED ON PAGE 166

Between-Bobbin Variations Cause Most Yarn-Number Variations

By GEORGE M. BORNET, Ontario Research Foundation

A recent survey by the Ontario Research Foundation covered the short- and long-term unevenness of worsted yarns. The 139 yarns tested came from 42 mills in Canada, the U. S., and Europe. The yarns were spun on the Bradford, French, American, and Ambler systems.

Large differences in yarn-size variation were found between different yarns. The extreme values were 1% to 5.1% CV. Yarns with high variation came from many mills.

The variation was found to be independent of yarn numbers, of the fiber used, of the system of drawing and spinning, and of the short-term unevenness of the yarn. Yarn-size variation was found to be independent of the number of processes and doublings used, even though the lowest number of processes from top to yarn was four and the lowest number of doublings was 14. Raper-prepared yarns had a size variation similar to other yarns.

High between-bobbin variation caused much of the variation. Six yarns with a total variation over 4% all showed a higher between-bobbin variation than within-bobbin variation. This between-bobbin variation in these six yarns was responsible for 78 to 91% of the total yarn-size variation.

What Causes Variation

Between-bobbin yarn-size variation is unlikely to be caused by short-term unevenness of sliver, but it can be caused in some of the earlier processes. Stretching of the roving, draft differences between deliveries, differences between machines, and draft differences in time can contribute toward this variation.

These four possible causes of variation in yarn numbers can be avoided. Short-term unevenness in sliver and the within-bobbin yarn-size variation

that it causes are inherent in the spinning processes and cannot be eliminated entirely.

The between-bobbin variation in yarn size can be regarded as a fault in processing and explains why high yarn-size variations should occur with all fibers. This variation also explains why the Autoleveller does not lead to a lower yarn-size variation than can be obtained without an Autoleveller.

Between-bobbin yarn-size variation should not be present at all or no larger than the small value of about 0.5% attributed to short-term unevenness in sliver. A between-bobbin variation of 2.5% CV should warrant corrective action.

How To Check Variation

If between-bobbin yarn-size variation is to be determined in a mill and later controlled, you must weigh more

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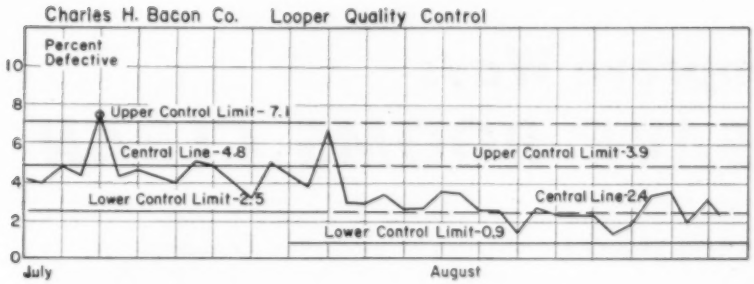
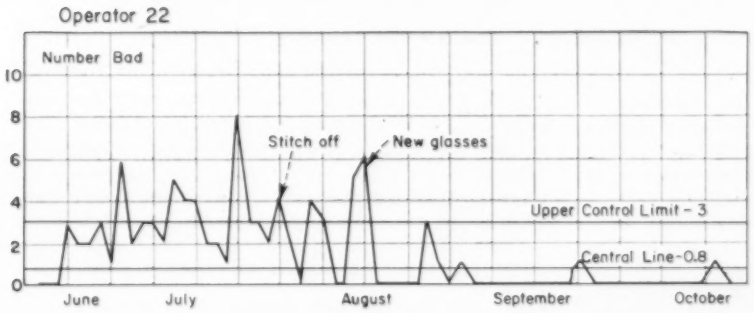
How Control Charts Helped Knitting Operations

By H. F. LITTLETON, Charles H. Bacon Co.



P CHART shows the effect of statistical quality control on a looping department. Controls were started in July, and the average defects fell from 4.8% to 2.4% in one month.



C CHART shows how an operator's work improved when she was fitted with new glasses. Supervisors work closely with operators and give the operators every chance.

Statistical quality control was introduced to Charles H. Bacon Co., Lenoir City, Tenn., about two years ago. We have used C charts and P charts since then to reduce faults in our hosiery and keep quality on a high level.

C charts were made for individual operators and machines on all three shifts in our full-fashioned-knitting department. We set controls by collecting data on pull threads and machine menders from random samples.

From the charts we made, we were able to distinguish individual differences of operators on the same machines. Machine efficiency is now quickly and accurately checked to determine if a machine needs overhualing.

Charts were set up for the seamless-knitting department in a similar manner. The charts were set up according to the bays and sections. Each section contains 36 knitting machines, and each bay has four sections. We were then able to compare one section with another, one fixer with another, and one bay with another.

Our looping was considerably improved by using C charts and P charts. We were able to tell whether operators required glasses or whether they were not suited for looping. Loopers were able to earn more money, and discharging inefficient workers was made easier. Best of all, our defects dropped from 4.8% to 0.9%.

C charts cover individual operators, and P charts show the average of the department. To produce the C charts for loopers, 16 stockings are selected each day by a roving inspector. Selection is done at random four times each day.

The inspector examines the stockings for looping faults and enters the

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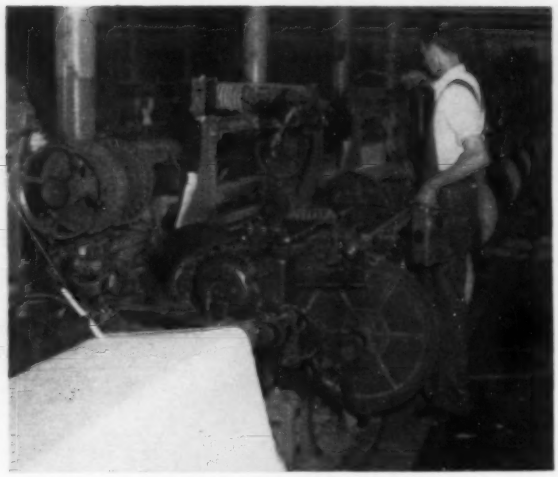
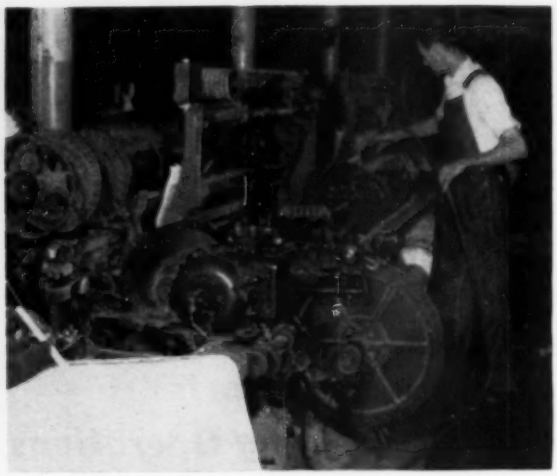


CHEMICAL CLEANER is sprayed on the loom with compressed air after the loom has been blown off superficially.



COMPRESSED-AIR HOSE is then used to blow the chemical cleaner and accompanying lint from the loom downward to the floor.

Cotton Mills Improve Ways To KEEP WEAVE ROOMS CLEAN

• Cleaning methods have become as important as production methods in cotton weaving mills because clean fabrics are now an integral part of first-quality fabrics. TEXTILE WORLD made a survey to see how six mills are cleaning their looms and buildings. Here are the results—

COTTON WEAVING MILLS are giving a lot more attention to keeping looms and buildings clean than they did only a short time ago. The trend to cleaner weave rooms began early in 1956 and has increased rapidly.

TEXTILE WORLD recently completed a survey in six mills weaving cotton fabrics to see how looms and buildings are being cleaned.

The trend to clean looms is concentrated in cleaning looms at warp-outs. However, all the mills in the survey have daily blowing-off schedules.

The newest way to clean looms at warp-outs is to apply a chemical cleaner; then the looms are blown off with compressed air. No other cleaning is done. The method is quick and requires a minimum of labor. Four of the mills surveyed are using this method.

One Man Spray-Cleans 194 Looms

Here's how one mill does the cleaning.

There is one employee to clean looms on each of the three shifts in a weave room containing 194 Draper X-2 looms. Fabrics woven are basically chambray from combed-cotton yarn.

Empty looms are sprayed with a chemical-cleaner and water solution. The cleaner is in a hand spray gun powered by compressed air from a regular air hose. The spray stream is controlled by trigger action.

Surrounding looms are covered with canvas shields on light metal frames to keep cloth and yarn clean.

Then the loom is sprayed from the harness sheaves all the way to the floor with the spray gun; the floor is also sprayed. As soon as the spray is applied, the loom is blown off from the top down to the floor with an air hose.

Loose lint is picked up off the floor, and the job is complete. The entire job requires only a few minutes.

Four Mills Use the Fast System

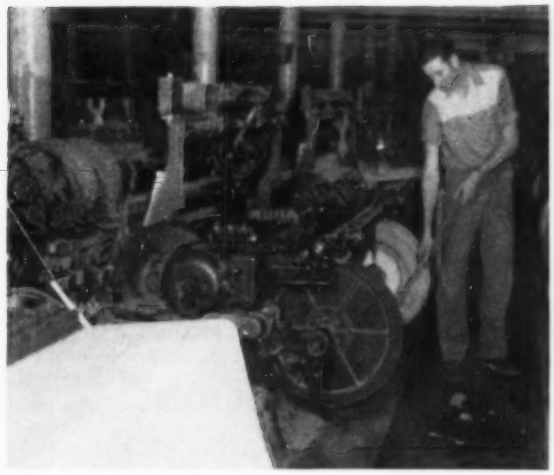
Three other mills of the six mills in the survey use much this same method in cleaning empty looms. Because labor cost is reduced substantially and cleaning effectiveness is about equal to that of manual cleaning with brushes, rags, and petroleum solvents, the spray method is sure to become more common.

Between 20 and 30 chemical manufacturers are distributing the cleaner.

The two other mills in the survey are sticking to the old-time method of simply blowing off empty looms with compressed air. Yarn laps around shafts are cut off with a knife.

The looms are not as clean as those cleaned with the chemical spray. And since the chemical left on the loom after the blowing off with compressed air tends to throw off lint and oil, the chemically cleaned looms stay cleaner longer.

Blowing off looms with warps on them is done much



LINT ON THE FLOOR is swept from under the loom and removed by a sweeper in 5 mins. Over-all cleaning time is 10 mins.

LUBRICATION follows cleaning. The chemical cleaner has removed all lint and dirty grease from all the lubricators.

the same way by all six mills; the biggest variation in practices from mill to mill is in the frequency of blowing off, which generally varies from once a shift to once every 24 hrs.

One mill weaving 96x64 sateen for laminating fabric blows off looms only every two weeks because the fabric must be absolutely free from oil and grease. Other looms in the mill are blown off once each day.

Blowing-off practices at one mill are: The entire loom is blown off, including harnesses, drop wires, handrails, and the loom at the back and front. Then the floor is swept under each loom.

A second mill blows off only the backs of harnesses and the drop wires once every shift.

Critical Parts Are Also Cleaned

In the third mill, looms with warps are given a general cleaning once each week in addition to daily blowing off. The cleaning employee brushes the front of the loom and blows out drop wires, loom arches, and harness strapping. Then he applies a solvent to the ends of the loom and blows off the ends. Finally, he blows under the loom and mops under it.

The cleaning employee at the fourth mill wipes the handrail and brushes the front harness in addition to general blowing off once a day.

The other two mills blow off drop wires, loom ends, and the loom front once a day.

The number of looms one employee can blow off each shift varies from mill to mill according to additional work done, such as cleaning handrails. Looms cleaned per shift by one cleaner in each mill are 130, 100, 317, 202, 194, and 120.

Weavers Clean One-Third of Looms

In the five mills where loom-cleaning employees do not clean harnesses, handrails, and filling grates, weavers keep these parts clean.

Each weaver in the five mills cleans the three loom parts on one-third of his total looms. Fabrics woven and total looms per weavers' sets are:

Mill 1—carded broadcloth, 72 to 80 looms
Mill 2—combed chambray; 40 looms
Mill 3—Canton flannels; 48 looms
Mill 4—combed sateens and lawns; 37, 45, and 54 looms
Mill 5—carded sheetings and sateens for lamination, 40 looms

Buildings Are Given Attention

Weave-room buildings from floors to roofs are also cleaned as carefully as looms. Each mill has its own method and schedule for cleaning floors, light fixtures, humidification equipment, walls, and overhead building area.

Three mills maintain floors with the Tennant system, two mills scrub the floors with soap and water, and one mill has painted its floors gray all over.

The three mills using the Tennant system buff and wax the floors only at irregular intervals. The floors are scrubbed once each week in the two mills that wet-scrub. And the gray-painted floors in one mill are mopped each week with a small amount of detergent in water.

Lighting fixtures are blown off once a shift in one mill, once a week in two mills, once a month in two mills, and only once every five weeks in the other mill.

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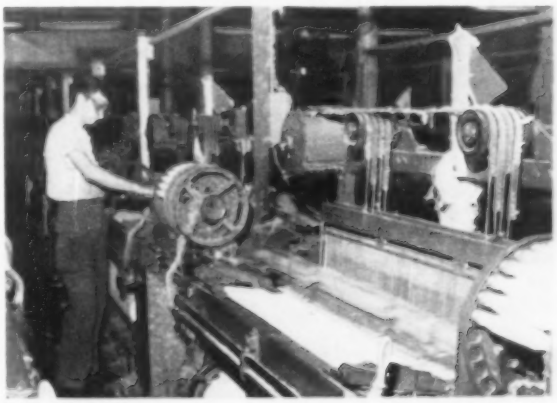

NORMAL CLEANING of looms is done at least once every 24 hrs. with a compressed-air hose. Parts cleaned at the front are handrails and harnesses.

FIBER and YARN Testing Features Cotton Research Clinic

• The 1958 Cotton Research Clinic, sponsored by the National Cotton Council, was held this year at Pinehurst, N. C.

• Nineteen papers were presented, and most of them dealt with some phase of testing fiber and yarn. Reports briefed in these pages cover carding, combing, and spinning test methods and instruments. One paper describes a new mechanism that permits carding without flats.

• The remaining papers will be reviewed in the May issue of TEXTILE WORLD.

Multiple Drawings Reduce Noil at the Comber

• Tests made at A. M. Smyre Mfg. Co., Gastonia, N. C., show that each additional process of drawing before combing reduces the amount of noil removed, but the cost is out of proportion to the waste saved.

By **D. HUNTER CAUBLE**, A. M. Smyre Mfg. Co.

Carding experiments made some years ago showed that the majority of cotton fibers have hooks on both ends and that the hook on the trailing end is larger than the one on the leading end.

These hooks persist through drawing, and the efficiency of the combing process is materially affected by altering the direction of the fibers.

EFFECT OF DRAWING ON COMBER LAPS

	NUMBER OF DRAWINGS		
Yarn tests	1	2	3
Noil (%)	13.75	11.75	10.00
Skein break (lbs.)	126	124	122
Yarn number	19.75	19.35	19.10
Break factor	2,488	2,399	2,330
Twist multiplier	3.20	3.20	3.20
Uniformity			
Brush (%)	65.0	64.7	65.5
Uster			
Integrator (%)	13.0	12.9	13.1

COMBER LAPS were prepared with one, two, and three drawings, eight ends up, followed by lap winding. Noil was reduced, but breaking strength went down.

Further research showed that when fibers are presented to the comber with the major hooks forward, a significant reduction in comber noil results with no adverse effect on yarn quality.

From these findings, it was recommended that an even number of sliver-preparation processes be used between the card and the comber so that the number of reversals would orient the major hooks.

Drawings Are Increased

In our experiments at Smyre, we tried three methods of comber-lap preparation: one drawing followed by lap winding, two drawings followed by lap winding, and three drawings followed by lap winding.

With the first method, the noil removed at the comber was 13.75%. With the second method, noil dropped to 11.75%; yarn strength dropped about 4%. There was no significant change in yarn uniformity as measured by evenness testers.

The third method, three drawings followed by a lap winder, oriented the sliver so that the fiber hooks were on the trailing end as they entered the comber, a condition that theoretically should have increased comber noil. However, the noil again dropped–this time to 10%. Yarn strength was 7% below that for the one-drawing process.

If the coarser American cotton fibers do not hook as readily as the Egyptian cottons, it can be assumed that the additional parallelization that results from increasing the number of drawing operations present the fibers to the combing cycle in a fashion designed to reduce noil removal.

The yarn appearance was lower for the three-drawing operations, and there are obvious economic disadvantages in increasing the number of drawing operations. A saving of 1% in noil reduces sliver cost 0.2¢ per lb. This saving if carried through to yarn reduces yarn cost 0.37¢ per lb. after the return from the sale of noil is considered.

To add an extra preparatory process would require an additional 40 deliveries of drawing (at about $1,500 per head) and one additional worker

per shift. Amortization of these costs by the reduction in noil would require about five years—if the yarn quality made the installation worthwhile.

How Smyre Combs Cotton

Our combing operation is as follows: We feed a 14-oz. lap and produce a 50-grain sliver. The speeds and settings for carding recommended by N. C. State College, modified in some instances to suit our conditions, have raised card production from 7 lbs. to 11 lbs. per hr.

Flat speed was reduced from 3½ to 2½ ins. per min., and some cards were equipped with metallic clothing. This clothing saves stripping and grinding time and produces 1¼ to 1½% less waste in carding and combing with no adverse effect on yarn quality.

Drawing frames, eight ends up, produce a 43-grain sliver with a draft of about 9.3. Front-roll speed is 300 ft. per min., and settings are slightly more open than normal.

Drawing at this relatively high speed requires that equipment for processes prior to drawing be maintained in excellent mechanical condition. If not, mechanical troubles in these processes will show up in the quality of the drawing sliver. To locate mechanical troubles that cause changes in the quality of drawing sliver, we use the Spectrograph instrument.

Lap Is Heavier

Drawing sliver is made into an 850-grain comber lap on a lap winder, 20 ends up. This lap is considerably heavier than the 600-grain lap made formerly on a sliver lapper and ribbon lapper.

To comb this heavy lap, we set the half lap closer to the cushion plate and set the top comb to penetrate the mass deeper. We use the most open needling available, and the needles must be kept sharp and clean. Flat needles are used in the top comb.

Present combers produce 53 lbs. per hr., compared with 12 lbs. per hr. produced by the old combers. About 3% less long fiber is removed in the noil than formerly.

The lap of combed sliver is then passed through five-roll finisher drawing, 16 ends up, with a front-roll speed of 186 ft. per min. A 60-grain sliver is produced.

SRRL Attachment Permits Carding Without Flats

• A lightweight, inexpensive mechanism that may replace conventional revolving flats on cards has been developed. Tests show that the change-over reduces waste, is 80% lighter than regular flat assemblies, and requires little maintenance.

By R. A. RUSCA, A. L. MILLER and R. S. BROWN,
Southern Regional Research Laboratory

WASTE REMOVED BY EXPERIMENTAL AND STANDARD CARDS

Card	Production rate (lbs. per hr.)	STRIPS: Flats	STRIPS: Cylinder and doffer	STRIPS: Motes and fly	STRIPS: Sweeps	STRIPS: Total	Total decrease
			AVERAGE OF FIVE COTTONS				
Standard No. 1	10	2.80%	0.86%	1.93%	0.26%	5.99%	
Experimental	10	0.0	1.03	1.82	0.24	3.06	49.0%
Experimental	15	0.0	1.34	1.59	0.18	3.10	48.3
			PIMA S-1, NO. 2, 1 7/16 INS.				
Standard No. 1	4	4.88	0.55	1.02	0.17	6.62	
Experimental	4	0.0	0.74	1.04	0.12	1.89	71.5
Experimental	6	0.0	0.78	0.88	0.07	1.73	73.9
			MEMPHIS AREA, LM, 1 1/16 INS.				
Standard No. 2	10	3.21	1.19	2.33	0.29	7.02	
Experimental	10	0.0	0.85	2.92	0.52	4.29	38.9
			MEMPHIS AREA, LM, 1 1/16 INS.				
Standard No. 3	10	3.14	0.85	1.96	0.28	6.23	
Experimental	10	0.0	0.89	1.95	0.28	3.06	50.9

STANDARD CARDS used in the tests were: No. 1—1948 card in excellent condition; No. 2—1948 card in good condition; No. 3—1942 card in fair condition.

An apparatus has been developed for converting conventional cards to a machine without revolving flats. The device is simple and relatively inexpensive and appears to be effective. It eliminates all flat waste, reduces dust and fly, and materially decreases the weight of the card.

Evaluations of the apparatus under pilot-plant conditions show reductions of 50 to 75% in over-all card waste, about the same nep count, and slightly more uniform sliver as compared with sliver from a conventional card in excellent condition. The apparatus appears to perform equally well on short-, medium-, and extra-long-staple American cottons.

Apparatus Is Simple

The SRRL development is a simple, fixed mechanism that replaces the flat assembly and flexible bends on conventional flat-top cotton cards. It also may be applicable to roller-top

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Spinning-Roll Run-Out Lowers Yarn Quality

• Thousands of bottom-front spinning rolls were measured for run-out in a cooperative mill test, and the findings were correlated with yarn and fabric quality. Results show that quality deteriorates rapidly when run-out exceeds 0.005 in.

By LAWRENCE O. BRAGG, Institute of Textile Technology

A cooperative research project to determine the effect of bottom-front-roll run-out was undertaken in 1957. Major objectives were to learn:

1. How many run-outs actually exist in a typical mill
2. How yarn properties are influenced by roll run-outs
3. The effect of run-out on processes following spinning
4. The effect of run-out on fabric appearance

Square-Neck Rolls Vary Most

In Plant A of a 50,000-spindle mill, 7,867 stands were measured for roll run-out; 7,447 of these stands were on frames with screw-neck jointed rolls and 420 were on stands with square-neck rolls. In Plant B, 1,380 stands of square-neck rolls and 1,224 stands of screw-neck rolls were measured.

Most of the screw-neck rolls were found to have relatively low run-out; only 3% had 0.005 in. or more.

Of the square-neck rolls measured, 40% of the stands in Plant A and 16% of the stands in Plant B had run-outs of 0.005 in. or more.

Yarn Quality Is Impaired

The effect of roll run-out on 31s single warp yarn was next studied. Run-out was varied from 0.000 to 0.010 in.

As run-out increased, break factor decreased from 2,289 to 2,052, down 11%. Single-end strength dropped from 10.64 to 9.12 oz., down 15%. Single-end percent of elongation went from 7.08 to 5.95%, down 14%. Percent of nonuniformity increased from 97.17 to 109.92%, up 12%.

Stops Increase at Spooling

Analysis of the findings showed that quality of the 31s yarn was appreciably lowered when run-out exceeded 0.005 in.

Warp yarn made with three different run-outs was tested at spooling and weaving. Warps were classified according to run-outs: Type A–0.000 to 0.003 in.; Type B–0.0035 to 0.0055 in.; Type C–0.006 in. and higher. From 5,000 to 7,000 bobbins of each type were observed at spooling.

Type A warp showed 12.68% rejects; Type B, 13.64%; and Type C, 14.16%.

At weaving, warp stops per 32 loom hours were: Type A, 11.7%; Type B, 13.1%; and Type C, 17.3%.

Warp stops were caused by weak ends, gouts, and unclassified breaks.

The appearance grade of 80x80 print cloth, woven with various filling yarns, was found to decrease with increased roll run-out. No correlation was found between the appearance grade of 110x58 broadcloth woven with warp yarns produced with different bottom-roll run-outs.

Nepotometer Can Be Used As a Mill-Laboratory Instrument

• For the commercial grades of American Upland cottons, fineness and maturity are inadequate criteria to control neps. The Nepotometer provides a means for estimating nep performance of cotton in the mill.

By LEON D. PRYOR and JOHN P. ELTING, Cotton Mills Div., The Kendall Co.

The results of three mill experiments in which the Nepotometer grade of the cotton used was controlled indicate that the Nepotometer can predict the tendency of cotton to form neps during processing

With American Upland cottons of 1 3/32- to 1 1/8-in. staple and grades of Strict Low Middling to Middling, Nepotometer grade is vastly superior to either fineness or maturity in predicting the tendency to form neps.

Each lot in the mill tests consisted of several bales selected to possess as closely as possible identical physical properties but different Nepotometer grades. At the time of opening, four samples were taken at various loca-

tions throughout each bale. The Nepotometer measurements were repeated to be certain of the actual cotton run, and duplicate determinations were made on each of the samples.

Mill Conditions Differ

The tests were conducted at different mills with substantially different quality requirements, levels of cotton quality, and neps in the card web.

In the table, which summarizes the essential test information, the number of neps per 100 sq. ins. of card web and the number of imperfections per 50 yds. of yarn are reduced for comparison to a 100% basis. The number of neps and imperfections for the lot with the lowest Nepotometer grade is shown as 100%.

In the first test, the operation of a four-bale mix having a Nepotometer grade of 1.5 is compared with a regular mix that averaged 2.5. The test card web contained little more than half as many neps as the regular-mix web. Imperfections in the yarn were reduced only slightly.

In the second test, two lots of five bales each with average nep-potential grades of 2.0 and 3.5 were run. Where the Nepotometer grade was increased one-half, neps in the card web and imperfections increased substantially and yarn appearance decreased approximately one full grade.

RESULTS OF MILL TESTS ON COTTON WITH VARYING NEPOTOMETER GRADES

	Test 1		Test 2		Test 3		
	Test cotton	Regular mix	Lot 1	Lot 2	Lot 1	Lot 2	Lot 3
Neotometer grade							
Blended-bale samples	1.5	2.5	2.0	3.5	2.3	3.0	3.3
Picker lap	...	...	2.0	3.5	2.3	3.3	3.7
Neps in card web (per 100 sq. ins.)							
Kendall	100%	161%	100%	212%	100%	125%	178%
USDA	...	...	100%	244%	100%	156%	200%
Yarn imperfections (per 50 yds., Neptel instrument)							
Kendall 30s	100%	112%	100%	184%	100%	114%	161%
Kendall 38s	100%	105%	...	...	...	...	...
USDA 22s	...	...	100%	125%	100%	113%	131%
Yarn-appearance grades							
USDA 22s	...	...	B+	C+	B+	B	B
USDA 36s	...	...	B	C+	B	C+	C+

NEPS AND IMPERFECTIONS are relative. The cotton lot with the lowest Nepotometer reading is shown as 100%.

In the third mill test, three lots of five bales each were run. Blended samples from each lot were also processed at the USDA spinning laboratory. The Nepotometer grades were 2.3, 3.0, and 3.3. Nep-potential measurements made on the picker-lap samples showed that there was an increased tendency for cottons with higher nep potentials to nep. In this instance, the corresponding values were 2.3, 3.3 and 3.7.

Neps in the card web and yarn imperfections increased substantially in the yarns produced both at the mill and at the USDA laboratory. Yarn appearance was lowered by about one-half grade.

Increments Vary Between Lots

There are five comparable pairs of observations within these three experiments, and each has a different

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Pilot Mill Helps Predict Yarn and Fabric Quality

• A Belgian sales-yarn mill tests all its cotton on production machinery to assure quality yarn. The results of testing 10,000 bales of Acala 4-42 annually for five years show that yarn strength is going up, but fabric appearance is deteriorating because of ginning methods.

By **HENRY BRASSEUR**, Managing Director, Filatures Nouvelle Orleans, Ghent, Belgium

Belgian cotton spinners have to be able to use the cottons of all the cotton-producing countries of the world. As we very seldom buy cotton with a rejection clause, we have to keep and use every bale the shippers ship us. For these reasons, it is of the utmost importance to know exactly how the cottons we receive will turn out.

Testing instruments and formulas are helpful, but their accuracy is only relative. These formulas give little indication as to the way the cotton will behave when it is spun and what it will look like when it is cleaned. Moreover, some cottons are always blended with other cottons. So how should we be able to discover the real qualities of these cottons if they are not spun separately?

All of these facts caused us to develop a "spinning-test" system that we use on every lot of cotton that enters our spinning mills.

The samples, drawn from each bale of a 100-bale (or less) lot, are classed by a professional classer and brought

to the mill. There, I inspect them with the help of the technical manager and draw a provisional conclusion ranging from excellent to very bad.

After running the usual tests with laboratory instruments, we actually spin the samples in a pilot plant and make a piece of tubular knit goods on a machine fed by 10 ends.

This action presupposes that the lot is even running; if not, it is divided into sub lots and tested separately.

All the machines in the pilot mill are regular cotton-spinning machines, but the roving and spinning frames have only a small number of spindles.

We realize that our equipment, the card for instance, could deteriorate without our knowing it. Therefore, we select one bale and mix it thoroughly by passing it through hopper blenders to keep for use as standard cotton.

Twice a month, some cotton is taken from that bale and passed through the complete set of tests used for each 100-bale lot. These tests include: Micronaire (10% of the bales), grade and staple (commercial grading), nonlint content (Shirley analyzer), staple length (practical spinning length), neps (card-web content), strength (skein test), appearance (ASTM), color (fabric), and appearance (trash content).

We have tested about 100,000 bales of cotton from the 1952-57 seasons; over 1,600 tests were made.

Acala Cotton Is Tested

We test about 10,000 bales of Acala 4-42 each year, and we have never been able to detect any difference in the end products made from Acala grown in California or in Mexico.

The yarn strength showed a steady improvement of about 10% in four years, but fabric appearance deteriorated because of trash content.

Our tests for the last five seasons show that:

1. The grade of the cotton is better from year to year (except last year).

2. The appearance of the fabric is getting worse and worse.

3. The correlation for the first four seasons showed fabric appearance and classer's grade to be just the opposite of what it should be—the better the cotton, the worse the fabric.

4. Last season's cotton was catastrophic.

The results of these tests caused us to question the professional ability of our classer. To make sure of our findings, we compared the classer's grade with the results of the Shirley analyzer tests for the average of each sea-

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Fiber Length of Cotton Should Be Increased

• A survey among mills representing over 1-million spindles shows conclusively that cotton-fiber length should be increased to meet modern manufacturing requirements. Most mills now demand 1 1/32-in. or longer staple.

By **BURT JOHNSON,** National Cotton Council

There are strong correlations between fiber properties that make it difficult to separate the contribution of length to yarn quality or spinning efficiency. A clear-cut case of how length contributes to yarn strength is shown in an experiment with rayon. With denier and fiber strength constant, yarn strength goes up with increased staple length.

For 24s rayon yarn, a ½-in. increase in staple length causes 7% increase in yarn strength over the base of 260 number-strength units. By increasing the 1½-in. staple in a 24s cotton yarn ⅛ in., yarn strength increases 12.6%.

In short, length and the factors that make up length exert a powerful force on cotton-yarn production. The spinner takes advantage of this fact when he combs cotton to manipulate the factors in the length pattern.

The use of 1-in. and shorter cotton has decreased in the past 20 years, while the use of 1 1/32-in. and longer cotton has increased. About 20 years ago, 1-in. and shorter cotton accounted for 65% of the cotton spun. Today, this cotton accounts for about 35% of the total. The 1 1/32-in. and longer cotton now accounts for 65% of the cotton spun.

Modern spinning, fabrics, and taste demand longer cottons; but not all staples should be raised 1/32 in. or more. Length should depend on requirements.

Mills Want Longer Fibers

Production executives of mills representing over 1-million spindles were asked what has happened to spinning in their plants since World War II. They replied that:

1. Each mill has modernized its machinery, processing organization, maintenance program, and atmospheric control.

2. Spindle and front-roll speeds and package sizes have been increased.

3. Each mill has increased spindle load 50 to 300% per spinner by eliminating most cleaning tasks and by better maintenance of machines.

4. Each mill is working closer and closer to the spinning limits of its cotton and is trying to be more selective in cotton buying.

5. Variations in ends down are no greater than they were at the end of the war.

6. Each mill reported that fiber length is the cotton property most in need of improving.

Costs of manufacturing seem to be related mostly to the factors of length; so breeders should study length. This fact does not mean that other fiber properties and yields should be sacrificed to length. The breeder has much work to do and many experiments to perform before he reaches a final conclusion as to how much he will stress length in his breeding program.

what's happening in the KNITTING BUSINESS?

- $ volume . . . UP
- no. of workers . . . DOWN
- labor unions . . . OUT
- profits . . . TOO LOW
- the future . . . ?

By JAMES H. BLORE
Associate Editor
TEXTILE WORLD

KNITTING IS BIG BUSINESS in the U. S. today. And it's getting bigger.

In 1947, the value of deliveries from knitting mills producing fabrics and garments was 12.8% of the total value of shipments from knitting and weaving mills that produce apparel fabrics. Last year, knitting-mill products were valued at more than 30% of the total figure.

The value of shipments of hosiery and knitted goods from U. S. mills is now more than $2-billion per year. About 2,500 mills share this business. These mills range from small plants with four or five knitting machines and a capital investment of a few thousand dollars to giants like the $10-million Berkshire Knitting Mills.

Apparel products made in these mills range from hosiery to hats. Industrial products range from meat bags to fish nets, and furnishing fabrics range from floor mats to upholstery.

Because most end products leave knitting mills ready for the retail counter, the value added to knitted goods is higher than that on products made in most other textile mills.

knitting business

Company	Year	Sales ($)	Net income ($)
Adams-Millis Corp.	1952	13,727,220	440,000
	1953	12,991,175	340,000
	1954	13,562,577	350,000
	1955	15,573,088	300,000
	1956	14,877,590	260,000
Chadbourn Gotham, Inc.	1952	11,910,000	580,000
	1953	12,010,000	350,000
	1954	13,270,000	310,000
	1955	15,580,000	340,000
	1956	19,580,000	100,500
Davenport Hosiery Mills, Inc.	1952	8,530,122	500,311
	1953	7,234,941	322,899
	1954	5,755,440	76,579
	1955	6,019,234	148,234
	1956	5,400,281	45,765
Munsingwear, Inc.	1952	28,948,732	968,814
	1953	29,485,281	1,100,194
	1954	27,554,803	601,096
	1955	29,018,392	854,480
	1956	29,168,285	646,175
Wayne Knitting Mills	1952	15,166,759	1,342,459
	1953	13,593,407	1,105,455
	1954	12,772,732	1,083,497
	1955	12,561,438	871,127
	1956	13,340,665	997,488

PROFITS on sales of these knitting mills, which are representative of most large mills, have steadily declined over the last few years. Sales have, in most cases, stayed fairly stable.

LABOR

There are more than 216,000 workers employed in knitting mills. The number of workers has gradually fallen since 1951, when 242,000 workers were employed. Average hourly earnings, however, have risen from $1.28 in 1951 to today's average of $1.46. Efficiency has been increased to the point where the fewer workers are turning out more goods.

Knitting-machine builders were the only builders of textile machinery that reported an increase in sales in 1957 over 1956. [TEXTILE WORLD, Jan., '58, p. 11]. This increase was largely in seamless-hosiery and in underwear and outerwear machines. The figures reflect continuing high production in these fields because the sales were mostly added machines and not replacements.

The immediate picture is not bright, however, for all knitting mills. Most hosiery and tricot mills have experienced some lean years since 1953. Overproduction, low profits, price brackets, higher costs, changing consumer habits, and the longer wear of man-made fibers are a few of the reasons that large and small mills alike are squeezed.

The high number of small mills produce intense competition. Mills strive to keep costs down by increasing workloads, reducing waste, and installing labor-saving equipment.

Prices Have Not Risen Much

Minimum-wage increases since World War II have not appreciably increased the price of knit goods. Mills that suffered most from the minimum-wage increases were mills that had to provide make-up pay for inefficient workers, but mills absorbed the added costs.

Most hosiery and underwear mills are located in the Southeast. Knitted-outerwear plants are concentrated in New York and Pennsylvania, while warp-knitting plants are spread through New Jersey, Pennsylvania, and the South.

Many knitting mills, especially those in the South, have no labor union. In practically all elections in knitting mills during the last two years, the labor organization has come out second best.

Knitting mills are generally small and very often family run. It's not easy to introduce a union where the boss knows most of his employees by their first name.

Southern workers are still suspicious of labor organizations. The unions' decision to oppose segregation didn't help their cause in Southern states, and unions are going to have a tough time organizing knitting mills during the next year or two.

PROFITS

Low profits are universal among textile mills, and knitting mills put low profits above all other problems. These profits have steadily declined over the last ten years.

Overproduction is given the biggest blame for the low profits. Modern knitting machines are tremendous producers, and the production of a new article soon overtakes consumption.

Mills continue to run machines three shifts a day six days a week until their warehouses are full. To get back some of the capital invested in yarn, the mill sells almost at cost.

Price brackets also share the blame for low profits. Working to other mills' prices instead of the mill's own costs not only squeezes profits but puts some mills in the red and forces them to go out of business.

Price brackets are traditional in hosiery and knitted goods, but they cause many sleepless nights for mill men. Some mills are using packaging techniques to get over the price-bracket problems where goods must sell on the retail counter for 39¢, 49¢, 59¢, 69¢, 79¢, or $1.00. Packaging two or three products together in a polyethylene bag has helped this problem and also increased unit sales.

Quality Was Lowered

Other mills try to get goods into a certain price bracket by reducing quality standards to allow the mill to show a profit. Cheaper yarns, dyes, and sewing threads are used; courses are reduced; and the stitch is lengthened.

These practices have led to the production of some shoddy merchandise, which has in many cases undermined the consumers' confidence and created grave problems. Trade associations have introduced voluntary standards, but the majority of mills don't go along with them.

Fortunately, there is a greater recognition of better quality in most mills. Big buyers of hosiery and knitted goods now have their own laboratories to test goods they buy, and these laboratories are staffed by trained technicians.

PROMOTION AND SELLING

Knitting mills have been guinea pigs for new fibers. Nylon, Orlon, Acrilan, and other man-made fibers have made their debut in knitting mills and have displaced cotton and wool in many end uses.

These man-made fibers have presented their problems. Technical problems have been licked, but other problems created by the longer wear of these fibers still remain.

Man-made-fiber manufacturers are now helping knitting mills promote their merchandise. Advertising, promotion, and selling knitted goods have been haphazard because of the many small mills. The few larger mills have borne the expense of advertising and promotion.

Selling methods are changing. The success of some of the larger companies in selling goods directly to retailers has prompted some smaller mills to go into selling. This trend is growing.

A number of mills look on selling agents and jobbers as sharp operators who always try to squeeze the last nickel's profit from the hosiery or knitwear manufacturer. Some agents do, but the knitter generally admits afterwards that he should never have yielded to the agent's pressure.

More knitted goods are finding their way into supermarkets. However, some damage has been done by selling shoddy merchandise disguised in fancy packages to supermarkets.

WHAT THE FUTURE HOLDS

The future of knitted goods lies largely with the consumer. Changes of consumer habits can soon ruin a mill. To combat this problem, mills are becoming more and more diversified. Mills that previously made only one product are now producing various types of knitted products.

Today's modern trend to easy and more-comfortable living suits the manufacturer of knitted garments. His sales are climbing, and the 4,000,000 babies that are born in the U. S. each year are big users of knitted wear.

Paper and nonwoven fabrics, which threaten many sections of the textile industry, hold little threat to the knitting business, where softness and elasticity are essential properties of hosiery and knitted goods.

men's and children's hosiery

IN SPITE OF A RISING POPULATION and a higher standard of living, shipments of men's, children's, and infants' hosiery from U. S. mills gradually declined from 90,614,000 doz. pairs in 1952 to 76,204,000 doz. pairs in 1956.

Men and children have not been going without socks, but their socks have been wearing much longer. The cause of this decline in sales is stretch yarns, which were introduced in the U. S. about 1952.

All would have been well for hosiery mills if they had not drastically reduced prices on these items to a point where very little or no profit was made. A good return on investments was made when these socks were first introduced, but it didn't take long for mills to slash prices.

Quality of course suffered with the cheaper socks, and many wearers turned back to cotton socks. Socks made from combination yarns of cotton and stretch nylon and wool and stretch nylon are growing in popularity. These socks do not last as long as all-stretch socks.

Stretch socks are now a staple item, but the rate of increase of production is slowing up as distribution pipelines are being filled up.

Last year saw the turning point in children's and infants' socks when more hosiery (23,777,000 doz. pairs), was shipped than in any of the previous three years.

More Promotion Is Needed

To get people to wear more socks is one of the hosiery mills' biggest problems. Men's and children's hosiery mills are usually small mills. There are about 500 of them, and most are in the South. The few large mills that produce branded socks do a good deal of advertising and promotion. The small mills do very little.

A campaign to help promote the sale of more socks and to improve quality standards was started last year by the National Association of Hosiery Manufacturers. The idea is for mills to submit samples to the association to be approved.

Samples that are approved receive a seal paid for by the mill. Receipts from the seal go toward an advertising campaign to tell the public about the program.

Most mills are, however, reluctant to go along with the program. Large mills making branded socks say that their brands are good-enough criteria of quality. These mills

usually make socks that retail at 79¢ to $1.50 per pair, and they point out that seals can be placed on 39¢ socks.

Small mills frankly admit that they can't afford the extra 3 to 5¢ to pay for the seals and the testing of the socks.

Practically all mills agree, however, that the basic idea is good and that something should be done to promote hosiery and uphold quality. Voluntary systems, however, don't seem to work for hosiery mills, although compulsory quality standards, such as that used for Morpul socks, seems to work more satisfactorily.

Price Brackets Are a Problem

Men's and children's hosiery mills suffer more from the price-bracket problem than other mills because of the great range of retail price brackets all with a 10¢ interval from 29¢ up to $1.00. A few cents added to the cost of a dozen pairs of socks pushes the item into the next price bracket. There is no such thing as a 32¢ or a 45¢ pair of socks, although some mills are offering two or three pairs of socks to retail for $1.

If the mill's labor or material costs rise, mills must either take less profit or down grade the quality of the product. The mill aims to make 5 to 10% profit and the middleman expects 4 or 8%, but retail establishments are increasing their mark-ups from 42 to 45% to pay for their added costs.

If socks were increased in price, the 42% mark-up would be sufficient, but instead the mill usually holds its costs down by reducing the profit. Sometimes the profit is reduced or eliminated by what mills call their overhead items.

Overhead items are numbers that are usually made in volume but have little or no profit. When times are slack, mills run these numbers to help pay for light, power, and other overhead costs.

A selling agent naturally tries to get his goods at the cheapest source and asks his supplier to provide a sock similar to a sample but 5 or 10¢ per dozen pairs cheaper. The mill often agrees to make identical socks to keep his customer, but the profit is not there any more.

While this practice of working to other mills' costs is fairly common in hosiery mills, there are also evidences of other faulty costing practices. One of the frequent faults that occur when mills run short time is to figure their costs on what the production potential is instead of the actual production.

Another frequent fault is to base dye-material costs on bleached goods. Overhead costs are usually based the same for knee-high socks as they are for short socks. Where mills have added new machines, the new machines pay the depreciation.

Some years ago, each sock in the size range sold for a different price. The trend turned toward selling an average price. Jobbers then offered less for lower prices but were not prepared to offer more for the larger sizes.

Another cost squeeze hosiery mills are finding themselves battling is the increasing costs they are paying for royalties. Mills are worried because individuals seem to be obtaining patents for ideas that were common practice many years ago. Royalties for special tops, heels, toes, packages, diaper bands, and even a little sewing decoration eat into profits and stifle sales.

Mills Are Not Getting Bigger

There seemed to be a trend several years ago toward hosiery mills becoming fewer and bigger. This trend has slowed. One of the reasons is the individuality of the hosiery knitter. In spite of reverses, he likes to be his own boss.

A mill often gets started by a fixer assembling a few machines in his basement or garage. He can undercut the prices of any mill in the business because his overhead is practically nil; he operates and fixes the knitting machines very capably, and his wife or sister does the looping.

A number of such enterprises pose a big threat to larger mills, and the larger mills encourage the threat by selling him old machines and buying gray goods from him. As long as the fixer-become-manufacturer stays small and doesn't get into finishing and selling finished goods, he can stay in business. When he starts to grow and employ other people, he usually gets into the same troubles as his larger brothers in business.

HOSIERY SHIPMENTS (1,000 Doz. Pairs)

Type	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
Women's										
Full-fashioned	39,251	42,879	45,568	52,377	49,847	52,537	50,778	49,896	48,366	44,087
Seamless	10,755	8,517	7,487	7,776	7,337	7,584	8,618	9,569	11,882	15,288
Anklets	17,224	13,603	14,493	13,906	13,367	14,556	14,891	14,073	12,788	11,809
Total	67,230	64,999	67,548	74,059	70,551	74,677	74,287	73,538	73,036	71,184
Men's										
All Types	60,959	57,205	57,807	63,552	60,133	64,085	60,184	60,459	57,585	52,865
Children's and infants										
All types	19,529	21,752	21,156	23,482	22,716	26,529	25,246	23,441	23,679	23,339
Total, all types	147,718	143,956	146,511	161,093	153,400	165,291	159,717	157,438	154,300	147,388

SHIPMENTS of hosiery have gradually declined since 1952. All types of hosiery have suffered this decline, although the decline in children's-sock shipments stopped in 1957.

Hosiery selling methods are going to change drastically in the next few years. Most mills sell their products through the 700 or 800 agents and jobbers in New York and Chicago.

More and more hosiery is being sold through supermarkets. Hosiery mills are going to sell these socks directly to the supermarkets in the future.

More mills will set up their own selling offices and employ their own salesmen. More sales will be made directly from the mill. Long-distance telephone calls are less expensive than maintaining an office in the Empire State Building.

More promotion, more ideas in styling, more efficient equipment, and harder sales are going to turn the tide and put hosiery knitting back on a paying basis.

women's hosiery

OVER-ALL PRODUCTION of women's full-length stockings has remained remarkably stable since 1950 at an average annual production of 59,320,000 doz. pairs. Seamless-hosiery production, however, jumped from 12.6% of the total in 1950 to about 31.5% in 1957.

Full-fashioned mills have rapidly added seamless equipment to cash in on the present demand for seamless stockings. The trend toward more seamless hosiery continues, although the pace has slowed since the latter part of 1957. Hosiery men expect the market to level off with about 40% of hosiery made on seamless machines.

Some of the older full-fashioned mills were seamless mills before World War II, but seamless techniques had been almost forgotten. Training knitters, fixers, and loopers, probably the biggest problem in the change-over, was met with new training methods.

Why Seamless Became Popular

The increased popularity of seamless stockings stemmed from the discovery that circular-knitted stockings could be made to permanently acquire the shape of the female leg by heat-setting treatments. Technical problems of doing this shaping and still making a stocking comparable to the full-fashioned article were immense.

Hanes Hosiery Mills Co. conquered these problems and heavily promoted seamless stockings. Large sums spent by machine builders to promote seamless hosiery began to pay off as more women demanded stockings without seams.

Sinking profits in full-fashioned hosiery caused full-fashioned mills to add seamless equipment because seamless stockings were selling at $2 to $3 more per dozen pairs than full-fashioned stockings.

Women's Hosiery Exports (1,000 Doz. Pairs)

Type	1951	1952	1953	1954	1955	1956
Full-fashioned	4,175	3,688	3,097	2,544	2,327	1,858
Seamless	219	308	402	406	345	406
Total	4,394	3,996	3,499	2,950	2,672	2,264

EXPORTS of women's hosiery have declined since 1951. Foreign countries are building their own hosiery mills—some financed with American capital.

What Happened To F.F. Profits

The present low-profit situation in full-fashioned knitting is in sharp contrast to 1945, when nylon was released from war purposes. There were few machines to knit this yarn, and mills made tremendous profits on full-fashioned stockings.

Profits of $10 to $12 per doz. pairs were not uncommon in 1947. This tremendous profit on goods that cost less than $5 per dozen to produce naturally attracted many new operators.

More and more machines were put into operation until more stockings were being made than could be worn by the country's 58-million potential customers. Mills rapidly started to pull down prices to sell their goods.

Many of the new operators were small companies, often started by fixers and knitters who borrowed money to buy two or four machines. These machines cost up to $40,000 each; and to pay for them, the machines were run three shifts a day for six and seven days a week.

Knitting machines produce some bad work when they are started from cold, and machines are often run three shifts on the assumption that one- or two-shift knitting is uneconomical.

The overproduction problem still exists in full-fashioned knitting. Some mills have closed down. Other mills have cut production to a four- or five-day week, and a few mills have changed to other products such as underwear and outerwear.

Women's hosiery was an excellent export item until 1951, when exports began to slip. In 1956, 2,301,000 doz. pairs of women's hosiery were exported. This figure was 15.7% less than the previous year.

Foreign countries are now making their own stockings, and several U. S. firms are setting up hosiery mills in foreign countries. South Africa, for instance, imported more than 554,472 doz. pairs of full-fashioned stockings from the U. S. last year; but two modern U. S.-financed full-fashioned mills have recently gone into production there.

To add to full-fashioned producers' woes, more women are going without stockings, particularly in the summer months. Statistics show that hosiery shipments have remained fairly stable over the last nine years, although women over the age of 15 in the U. S. have increased by 4,842,000.

With a consumption of 11.4 stockings per year per person, production would be about 4½-million doz. pairs more than today's production if women wore stockings the way they did in 1950.

Promotion Is To Be Increased

To combat the bare-leg problem and to get women to wear more hosiery is the biggest problem for women's hosiery mills today. Fortunately, something is being done.

PLEASE TURN THE PAGE

knitting business

Nylon producers, hosiery manufacturers, wholesalers, retailers, and trade associations are cooperating to sell more hosiery by increased advertising and promotion.

More-brightly colored stockings are being introduced and promoted to put hosiery on a fashion basis. Colored stockings have been pushed before, but not with the same concerted efforts shown today.

Color promotions will assist seamless mills as much as full-fashioned mills. The latter mills have, however, greater opportunities at their disposal to produce fancier hosiery with clocks, lace, and splicing.

Aside from attempts to produce stockings with a side seam or a seam that doesn't show, full-fashioned stockings look much the same as they did 10 years ago. Gauges and deniers have got finer, but the basic stocking has not changed.

Hosiery men are not to be blamed for trying to introduce new styles. Stretch hosiery was introduced several years ago with not much success. Stockings are now being made from two ends of 7-den. nylon, but over-all sales have not risen.

Quality Has Been Lowered

Depressed prices have lowered the quality of some stockings. Women have purchased stockings at 59¢ per pair and complained when they lasted only two wearings. This experience sours their confidence in hosiery and invites them to go without stockings.

Some manufacturers of women's hosiery have been interested in the hosiery quality-seal program for men's hosiery and would like to see it work for women's hosiery. Voluntary standards for women's stretch hosiery were introduced last year by Patentex, Inc., which controls most of the patents for making stretch hosiery. But to get all hosiery mills to adopt a standard is a difficult problem.

Certain practices that full-fashioned mills don't want to adopt are becoming general practices. Mills are driven to this situation because of competition that keeps prices and profits low.

Up to five years ago, one full-fashioned machine was operated by one knitter. Then a female helper was put with the knitter to operate two machines. Automatic machines were then introduced to allow one knitter to look after two machines with no helper.

Today, the practice of one knitter operating four machines with two female helpers is increasing. These practices save up to 50¢ per doz. pairs in labor costs, but they tend to lead to more faulty work.

How Some Mills Make Profits

Curiously, those mills that lean toward the production of better-quality stockings seem to fare better than mills that put price before quality. Some mills still find excellent sales for stockings that sell for $9.50 per doz. pairs. And these numbers have been found to be more profitable.

Mills that sell directly to the retailer fare better than gray-goods mills. Mills that buy from gray-goods mills can usually handle the orders they receive on their own machines.

More mills are priding themselves in offering fast service by keeping large stocks of finished goods instead of keeping gray goods. Keeping large inventories is risky, and the practice tends to keep prices down; but mills find that more sales can be made when orders are shipped the day they are received.

Mills that provide this service, emphasize quality rather than price, and sell directly to the retail store are the mills turning in a profit. And they are the mills that are going to stay in business longest.

What the Future Holds

Women's hosiery mills that are going to stay in business for the next two years are going to profit by the postwar crop of babies who start to wear full-length stockings by 1960. More than 1-million potential customers will then be added to the ranks of present customers each year. Much will depend on whether the present and future promotion programs will succeed in selling these potential customers.

The immediate future doesn't look too good. Competition in seamless-hosiery mills is increasing daily. Seamless stockings will be made with less cost than full-fashioned stockings if the experiments with new toe-closing methods are successful and the royalties on the methods are not too high.

When more two-feed machines are installed or the present machines modified to increase their production about 50%, the production potential will be enormous. Morris Speizman's 1957 circular-hosiery survey forecasts a production of 30- million doz. pairs of seamless hosiery for 1960 from single-feed machines.

Seamless machines are presently operating three shifts a day for six days a week, and overproduction with its attendant low profits now threatens seamless-hosiery knitters.

knitted underwear

MOST KNITTED UNDERWEAR MILLS have enjoyed steady prosperity for several years. While profits have not been spectacular, they have been regular. Underwear production has not suffered the declining rate of hosiery production.

The production of men's and boys' undershirts, for instance, rose from 15,288,000 doz in 1954 to 18,879,000 doz. in 1956. Other men's and boys' underwear-garment production rose from 11,622,000 doz. in 1954 to 15,301,000 doz. in 1956. The production of women's and children's underwear rose 6% in the same period.

The value of underwear-mill products rose from $357,197,000 in 1947 to $574,779,000 in 1954.

Some mills have been hurt by concentrating on one product, such as T-shirts or union suits; but these mills are switching to children's wear, sportswear, and outerwear. Many underwear mills now produce such outerwear garments as athletic shirts, sweat shirts, and polo shirts. So far this trend has not hurt the booming knitted outerwear business, but it could because wage differentials favor underwear mills.

Many underwear knitters operate in nonunion plants in the South. Basic rates in these mills are about $1.25 per hr., whereas rates in the knitted-outerwear plants in the North are $1.65 to $1.85 per hr.

Three knitted-underwear mills have recently set up branch plants in Arizona to be close to the mushrooming California market. These plants are used for cutting, sewing, and finishing knitted-underwear garments. The finished goods can be shipped rapidly to the Western market.

The fabric for these garments is knitted in Pennsylvania from yarn spun in Carolina from cotton grown in Texas and California. When and if the attempts to locate cotton mills in California are successful, knitting mills will move west in greater numbers.

Mills producing children's wear have enjoyed some good years because of the rapid population growth since World War II. But mills that have previously made only men's and women's goods are now going into the manufacture of children's goods .

The several large knitting mills that are doing their own printing made a wise move when they installed printing equipment. Smaller mills without printing equipment feel the pinch because commission printers of knitted goods are few and far between.

Much of the printed fabric is going into children's wear. These prints are small over-all designs in two or three colors. There seems to be no slackening off in demand for these products.

Lower Costs Are Sought

Rising costs and lower profits have caused mills to seek ways and means of reducing costs to keep selling prices down. Production incentives have been introduced in the knitting room. Where operators were formerly paid by the hour, they are now paid by the quantity of cloth produced.

This incentive has increased production but unfortunately has also increased faulty work. To get over this problem, mills are seeking methods of installing quality incentives to work in combination with production incentives.

Personnel troubles cause problems in underwear mills. Some mills have slack seasons where workers must be laid off for several months. These employees go to work in other industries, and they must be replaced by training other workers. The trend toward diversification of products is easing this problem.

Another problem is the shortage of qualified supervisors. Workers, particularly women, don't want to leave their machines to take on more responsibility. Operators' pay has risen with the minimum-pay hikes, but supervisors' pay has not risen in proportion.

Shrinkage Is the Biggest Problem

The biggest problem in underwear mills at the present time is the shrinkage of the finished garments after laundering. Cotton is still king in underwear fabrics, and cotton knitted fabrics shrink.

The problem gets more acute as more automatic washing machines and tumble dryers are used. Large buyers of knitted underwear are getting more shrinkage conscious because their customers won't reorder goods that shrink excessively.

To overcome the problem, new ways of handling cloth are being introduced. Stresses and strains on the fabric after knitting are being avoided. Fabric is being laid out in flat folds rather than rolled in tight rolls.

Mills are conducting tests with various yarns, machine cuts, machine diameters, and stitch length to discover which combination gives the lowest shrinkage. New ways of finishing are being introduced; but the patent situation on shrinkage machines is obscure, and mills are cautious about putting in these machines.

Resin finishes to combat shrinkage have been investigated, but some mills don't like the hand of the cloth for underwear after the cloth has been treated. There is a danger that some mills might expect resin treatments to offset the shrinkage caused by poor knitting practices.

Some of the large underwear mills have their own sales force, and these mills do a good job of promotion. Smaller mills would very much like to do their own selling but don't see how they can do it.

The Future Looks Good

Possibly because knitted underwear does not have the glamour of other knitted products or because underwear mills require a

KNITTED-UNDERWEAR PRODUCTION
(1,000 doz.)

Type	1954	1955	1956
Men's and Boys'			
Undershirts	15,288	18,382	18,879
Union suits	922	946	1,146
Drawers	1,189	1,291	1,796
Shorts and briefs	9,511	11,192	12,360
Women's			
Panties	25,285	27,735	29,011
Vests	1,203	1,148	1,039
Slips	.....	4,121	4,025
Petticoats	2,009	1,690	2,038
Girls'			
Panties	10,036	10,831	9,910
Vests and undershirts	1,204	1,401	1,691
Infants'			
Panties	2,308	2,997	2,516
Vests and undershirts	3,139	3,559	3,183

PRODUCTION of knitted underwear has gradually risen over the last few years. The value of knitted-underwear shipments rose from $357,197,000 in 1947 to $574,779,000 in 1954.

knitting business

greater capital investment than other knitting mills, there is not the same attraction for small operators as there is in hosiery or outerwear knitting. There are less than 200 mills producing underwear, compared with about 1,100 hosiery mills.

These mills employ about 32,000 workers; so the average mill has more than 160 workers. This compares with 76 workers in the average full-fashioned-hosiery mill, 105 workers in the average seamless-hosiery plant, and 54 workers in the average outerwear plant. Underwear mills constitute less than 10% of all knitting mills, yet they do about 25% of all knitting business.

All the 4-million babies born each year become customers for underwear the day they are born. There seems to be little threat at the moment of changes in consumer habits of wearing knitted underwear. Few mills are entering the field, and the future looks bright for makers of knitted underwear.

knitted outerwear

FEW SECTIONS OF THE TEXTILE INDUSTRY have benefitted from the postwar trend to more-relaxed living than knitted-outerwear mills. Production of sweaters and other types of knitwear have zoomed over the last few years, although profits on sales are gradually becoming smaller each year.

Profits on sales were 3.36% in 1950 but dropped to 1.58% in 1955.

When high-bulk sweaters first came into prominence, they sold for $72 per doz. The same sweaters eventually sold for about $65 per doz.

Many knitwear articles are now sold as stylish garments and not as utility garments to wear when the weather is chilly. This trend has caused many headaches, but it has also sold many sweaters that otherwise would have gathered dust on retailers' shelves.

For instance, sweater production in 1954 was 9,041,000 doz. In 1955, the production rose to 10,119,000 doz., and the 1956 figures were 11,539,000 doz. Women's sweaters accounted for most of the increase, but production of men's sweaters is rising too.

New fibers and yarns have contributed much to the recent popularity of knitwear. Knitters have benefitted from the publicity and promotion given to these yarns.

Knitted-Outerwear Production (1,000 Doz.)

Type	1954	1955	1956
Sweaters	9,041	10,119	11,539
Polo and T-shirts	17,933	18,659	18,662
Bathing suits	315	330	376
Knitted headwear	1,328	1,426	1,558

PRODUCTION of knitted outerwear has shown a healthy increase over the last few years. This increase, which is partly due to new fibers, yarns, and styles, is expected to continue.

Mills Are More Diversified

Like other knitting mills, outerwear mills are getting more diversified. Mills that formerly made only men's sweaters or women's sweaters now make both. Knitted-fabric mills that make wool jersey are putting in cotton-jersey lines.

Sweater mills are also including some woven-outerwear articles in their production. A typical example of this diversification is the mill that produces dyed-to-match skirts and sweaters. Because of this diversification, outerwear mills tend to become larger.

But some of the smallest knitting mills are outerwear mills that are family concerns. These mills, located chiefly in New York City and Brooklyn, have made trouble for larger manufacturers who have high overhead costs.

These large mills, in addition to adding more lines, are also doing more work themselves instead of having contract or commission houses do the work for them. For instance, mills are doing more of their own washing and dyeing. More mills are doing their own embroidery work.

This diversification has attracted added business. Satisfied customers can get more of the styles they want from one mill. Well-known brand names used on new products also help to sell these products.

Contractors who knitted sweaters for larger mills are installing sewing and finishing equipment so they can sell finished goods. These mills and other mills that previously sold to agents and jobbers are setting up their own sales organizations.

Mills Are Modernizing

Merchandising is getting more important for outerwear mills. More mills are installing electronic equipment to help predict sales. The same equipment is used for production planning and calculating wage rates. These installations are in line with the trend to more-efficient production.

Some of the larger mills are employing trained technicians to deal with technical problems and to do research and style development. These men are hard to find because textile schools produce very few men trained in knitting technology.

These men work closely with the production manager, who can now concentrate on getting out production rather than be tied down with technical problems.

Styling of knitwear has created shorter runs. Staple items get

fewer as more fashion items are being made out of lower-priced yarns. These styles change as mills swing over to the more-profitable items.

Some mills have dreaded the impact of the large volume of production from the new multifeed interlock machines. Garments from these machines have pulled the prices of acrylic-fiber sweaters down to $2.98. These machines are capable of producing few styles, and mills feel that new style trends will overcome the threat of the terrific volume of these machines.

Few Outerwear Mills Move South

Although there is a tendency for knitted-fabric mills to move South, where labor rates are about 50¢ per hour less than in the North, there is no sign of sweater mills moving from Pennsylvania and New York. California and Florida inhabitants are becoming large consumers of knitted outerwear, and some new styles originate there; but knitwear manufacturers prefer to be near the sales offices and style centers of New York City.

Business in knitted outerwear is influenced strongly by the weather. If buyers are stuck with car coats because of warm fall weather, they don't order sweaters.

Outerwear manufacturing is highly seasonal. Mills are usually busy from February until November. Some mills practically close down for several months. Closing down means laying off workers; and when the mill opens up again, new workers have to be trained because many old workers don't come back.

Mills have tried to remedy this situation by introducing other products, such as swimsuits; but the work is usually of a different nature, and operators are usually trained to do only one job. Working under these conditions, workers constantly seek more pay and fewer working hours per day, and absenteeism is frequently high.

Imports Are a Menace

Japanese competition has scared some knitwear manufacturers, particularly those who make full-fashioned sweaters. Japan exports about 300,000 doz. sweaters each year to the U. S. These sweaters are mostly full-fashioned sweaters made from zephyr worsted yarns.

Full-fashioned producers are keeping their machines busy on high-bulk and textured yarns—two yarns that are not yet made in Japan. If the U. S. consumer switches back to all-wool sweaters, full-fashioned mills can be hurt although there are quotas on sweaters.

Many sweater and fabric knitters don't want to go back to wool because of its fluctuations in price. Some knitters have lost their shirts in the past by buying wool at high prices just before a sudden drop in prices.

Acrylic fibers and textured yarns have their faults, but in some respects they are superior to wool for sweaters. These fibers are steadily being improved, and now fibers and yarns are coming along that will keep knitting machines busy after the popularity of the present fibers have waned.

Fiber and yarn producers are doing a lot to promote and advertise products made from their yarns. Producers of new yarns and fibers must do a lot of promotion to put their products above products now on the market.

This promotion helps sell more knitwear. New styles, new fibers new yarns, and new ideas will sell more knitwear. Unless production gets out of control the way it often does in hosiery knitting, outerwear manufacturers have the brightest future of all knitters.

warp knitting

EIGHT YEARS AGO, tricot knitting was one of the most profitable segments of the textile industry. Lush profits attracted many new mills into the business, but many of these mills have since disappeared and others are having difficulties.

The casualties were mostly small units, and tricot knitting began to concentrate in fewer but larger mills.

But a number of smaller mills are weathering the storm by concentrating on specialty fabrics, giving fast deliveries, and doing their own dyeing and finishing. Some of them stay in business because they cut and sew their own fabrics.

Warp-knitted-fabric shipments reached their peak in 1955, when 54,899,000 lbs. were shipped. Shipments in 1956 slumped to 48,314,000 lbs.

Fabrics made from nylon, however, are steadily increasing. In 1952, nylon warp-knitted-fabric shipments totaled about 6-million lbs. Nylon now accounts for about 22-million lbs. of warp-knitted fabric per year.

Mills Cut Production

A seasonal cycle seems to be affecting tricot knitting. Mills operate full blast from about February until November. Machines are shut down, and short time is run for two or three winter months. Several large Southern operations closed down for a whole week at Christmas last year, and this cutback is expected to relieve some of the overproduction problems.

Mills are cautious about buying large inventories of yarn to tide them over the slack season. If yarn prices fall just a few cents, tricot knitters lose money if they have a lot of fabric or yarn in inventory because converters or cutters will buy only at the new yarn price.

Lower prices of tricot fabric force larger yields with a deterioration of quality. But customers

Knitted Cloth Shipments (1,000 lbs.)

Type	1951	1952	1953	1954	1955	1956
Circular fabrics.....	104,912	116,477	116,944	115,510	126,985	127,786
Warp-knitted fabrics.	43,835	52,574	47,249	49,520	54,899	48,314

WARP-KNITTED-FABRIC SHIPMENTS reached a peak in 1955 and then declined. Circular-fabric shipments have increased gradually since 1951.

knitting business

shy away from the low-quality, high-yield fabrics. Poor fabrics from one or two mills can hurt all tricot mills.

More Yield—Fewer Machines

About four years ago, the average yield of tricot fabrics was 5 yds. per lb. Today the average yield is nearer 8 yds. per lb. This difference in yield means that fewer machines are required to knit the same amount of fabric.

New machines that knit twice as fast as conventional machines were introduced two years ago, but there have not been enough installations yet to make their presence felt. There are too many of the older machines on the market that can be obtained for a mere song. However, if one mill installed a large battery of the high-speed machines, it would be in a strong competitive position.

Buying yarn warped by the yarn manufacturer is on the increase. Yarn manufacturers have modern warping equipment with the latest electronic stop motions; so the yarn manufacturer can warp as good or better than the knitter. Claims can also be made for faulty warps made by the yarn manufacturer, although production might be upset.

Tricot knitters won't buy much more warping equipment unless they need it for fancy tricot fabrics. Mills will use their present equipment for warping nylon yarns. Acetate yarn can be bought on the warp almost as cheap as on cones.

Mills Don't Grade Alike

Grading fabrics is a problem suffered not only by mills but by converters and cutters. Each mill has its own system of grading, which differs from all other mills because several-dozen faults can be recognized.

Three or four quality grades are based on the number of faults counted in points in each roll of fabric. Second-quality fabric from one mill might be as good or better than first-quality fabric from another mill because the first mill might not recognize such faults as split or thin ends.

Electronic stop motions have cut down the length of faults where they have been installed, but many mills find they cannot afford any more gadgets for their machines. Other mills feel that the stop motions should be improved before they can afford to install them.

Mill men feel that new ideas are needed to increase the demand for tricot fabrics. Most tricot fabrics go into women's underwear, although smaller amounts are used in blouse and dress fabrics.

The new textured yarns offer possibilities to stimulate lagging sales of tricot fabrics. These yarns are filament yarns with a spun appearance.

Right now these yarns are expensive, but their prices will come down. One mill reports that jersey constructions tend to pin down the textured loops. New constructions can be worked out that might put tricot back to its high level of eight years ago.

What Raschel Mills Are Doing

Raschel mills are dividing into mills that produce staple items and mills that produce novelties. The staple-item mills work on a small margin of profit making such products as laces, trimmings, and power nets. The mills producing novelties are smaller; and they change their products rapidly to suit buyers of millinery, shoe fabrics, and industrial fabrics.

Both types of mills usually sell gray products to converters who have the goods finished and distributed. Some mills are wholly or partly owned by converters who largely control the selling price.

Since 1947, 37 new mills have started to make raschel fabrics; and overproduction has become a problem. To counteract this trend, some mills have stopped running the third shift, and some work only four days a week.

Some of the overproduction has been blamed on higher-speed machines, although gauges are changing from 36 to 48. Power-net business has, however, held up.

Power net was usually sold in three categories—light, medium, and heavy. The categories are now becoming more diversified to the extent that knitters make nets to exact standards.

One cutter wants fabric from which he can cut small panels to save material; so he may request a medium-weight, long-stretch fabric. Another cutter might specify a medium weight, short-stretch fabric. Most mills now make two or three grades of elongation and modulus in each weight, in addition to sheer tissue and an extra-heavy weight.

Knitters with 20 or more machines can absorb the different styles. Knitters with fewer machines have a problem because a setup cannot be made for a long run on any style. The inventory of rubber on beams is increased, and this rubber is perishable; so the trend to made-to-order fabric is not good for small mills.

Standards Are Needed

Finishing power net is difficult because of variations in rubber, rayon, nylon, and fabric construction. When a buyer approves a good white color, he expects all cloth to be that shade. Standard whites coordinated with gauge, denier, and color and gauge of the rubber yarn would help raschel knitters.

Unlike many knitting mills, the trend toward more machines per operator seems to be reversing in raschel mills. With fewer machines to watch, knitters keep the fabrics cleaner, broken ends are quickly detected, and the fabric quality is improved.

Several key men are being trained to reneedle and regauge machines. These men are also taught to replace worn bearings, guide-bar shafts, and chain links. This practice has improved quality and efficiency.

Short needle life has bothered some mills where needles were replaced five or six times each year. Conditions have improved over the last year. The talc-coated rubber yarn is difficult to run, and chrome-plated reeds and guides are standard. Chrome-plated needles may soon offer some relief from constant reneedling.

Raschel machines are very versatile, and new fabrics are constantly being developed. With the steady increase of machine speeds, the future of raschel knitting looks promising.

Use a New Formula To Make Effective LOOM-STOP CHECKS

• If you are making numerous and costly loom-stop checks and aren't able to evaluate the results, then switch to checks where your second hands do the work and results are proved with a formula

By ERNEST R. BECKNER

LOOM-STOP FREQUENCY CHECKS are often made only because they have become a habit. Little good comes from the checks, and they are very costly. Usually one man makes all the checks and stop-frequency studies as a big part of his regular job.

A recap of all the studies made during one week is not likely to agree with the weave-room efficiency for the given week. Then when the downtime from smashes, warp-outs, and waiting for cleaners is added, loom-check studies are often of no value.

The checks may result in establishing jobloads for smash hands, warp hangers, and loom cleaners that are too great; then weave-room efficiency is lowered. If the jobloads are too light, money is wasted for labor.

But the loom-stop frequency check is valuable for evaluating new loom settings and size formulas and for trouble shooting.

New System Costs Little

A newer system of making weaving studies, the ratio-delay method, gives accurate data at less cost than the frequency checks. But more important, it also checks the accuracy of timestudies and workloads.

The system gives accurate data on loom hours lost from warp, filling, and mechanical stops; smashes; warp-outs; and waiting for warps, cleaning, and loomfixers. From this data, the dollar cost can be computed and compared with mill standards.

A second hand on each shift should make the loom studies because he can do the work without added labor cost and his knowledge of looms and fabrics insures accuracy.

Train all the second hands in the new method. See that they realize the importance of recording the actual status of each loom. Have them record the stop at a predetermined position at each loom. They must not quicken the pace or hang back for any particular status.

Inspection tours must be made at the random times specified and completely without bias. While the second hands are being trained, decide on the necessary information the inspection tours must yield.

Make a checklist, and have only one second hand make several inspection tours to set up the system. Ask weave-room employees for their ideas. At this point, you must determine the maximum information you can obtain for the engineering department with acceptable simplicity for weave-room employees.

You Must Test the System

Adopting a system that is acceptable to weave-room employees will do much to make your program successful. Watch the completed program closely for a short time before you install it.

Give all completed loom studies to your standards engineer. Instead of working with loom efficiency, the engineer now is interested in the efficiency loss. Each nonproducing loom is considered defective.

He deals with two kinds of errors: (1) the sampling error, which varies in inverse proportion to the square of the number of observations made; and (2) the standard error of percentage, which is the variation normally expected from the whole chance-cause system.

Formula Determines Accuracy

First consider the standard error of percentage

$$SE = -\sqrt{\frac{P\,(1-P)}{N}}$$

Where:

SE=Standard Error

P=Percentage of element, looms stopped (expressed as a decimal)

N=Total number of observations made (each loom of each circuit is an observation)

With one standard error (SE), the results will be within tolerance 68 times out of 100; a false indication occurs 32 times. This error is too great for accurate data.

If you accept two SEs, the results will be within tolerances 95 times out of 100.

For more stringent requirements, three SEs will give a false indication only 27 times out of 10,000. But for most uses, two SEs are practical.

Minimum Checks Are Desired

Suppose you have 450 looms and make 12 inspection tours or 5,400 observations. Downtime occurs on 15% or 810 loom stops observed. Then:

$$SE = -\sqrt{\frac{0.15\,(1.00-0.15)}{5{,}400}} = 0.0049$$

or 0.49%

Two SEs are 0.0096 or 0.96%

Therefore: $0.0096 \times 0.15 = 0.001440$

When you make 12 trips with 5,400 observations at loom efficiency of 85%, your error will not be more than ±0.1% from true efficiency.

Fifteen trips with 6,600 observations at 85% loom efficiency give an accuracy of ±0.04% 95 times out of 100.

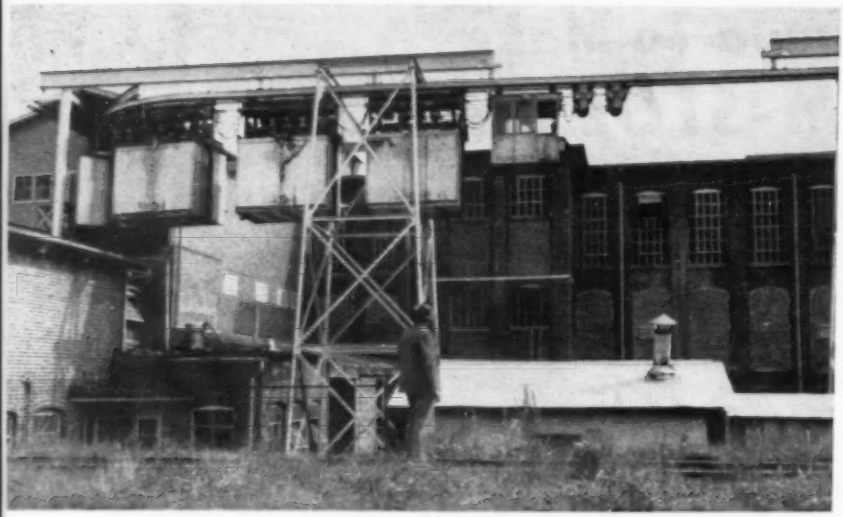
Efficiency Changes Affect Results

But with fewer looms, the sampling error is larger; to compensate for the error, make more observations. Any appreciable drop or rise in efficiency alters the accuracy of the results and makes it necessary to decrease or increase the required number of observations.

After you become familiar with using these calculations, you can easily figure the degree of accuracy on each week's ratio-delay check.

At the beginning of your studies, and occasionally thereafter, make a frequency-distribution check of non-

CONTINUED ON PAGE 174



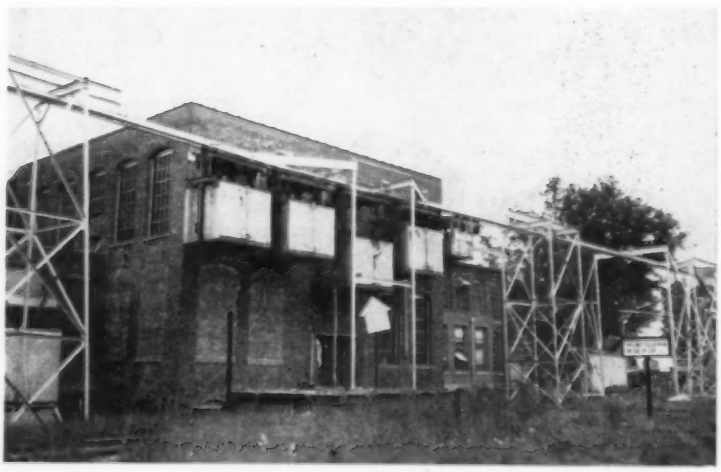
CONVEYOR includes a cab and four cars. At this station on one end of the line in Mill No. 1, roving is taken to a spinning room and empty cloth tubes are delivered to a weave room. Spun yarn and woven cloth are picked up.

MATERIALS-HANDLING SYSTEM
Combines Two Cotton Mills

A conveyor system with an over-all length of 1,500 ft. combines two separate mills at an Abney Mills plant. Now materials and machines are moved quickly between the two plants as they are needed. Other advantages are—

- $35,000 to $40,000 is saved each year
- Materials are moved between adjoining departments

By **JOE L. BURRISS,** Master Mechanic, Anderson Mill



CONTROLS at the conveyor cab let the operator lower an individual car (arrow) to the first-floor warper room in Mill No. 1. All four cars are lowered by aligning them in their correct positions controlled by limit switches.

AN OUTSIDE MATERIALS-HANDLING SYSTEM installed at the Anderson Plant, Abney Mills, Anderson, S. C., a little over two years ago has already paid for itself and is now saving $35,000 to $40,000 a year. The saving comes from:

1. Eliminating hand trucks formerly used and the necessary maintenance for them; casters are a big-saving item.
2. Eliminating two jeeps formerly used to haul cloth and maintenance for them.
3. Repairs to a gangway between two mills.
4. Cost of moving the hand trucks and jeeps.

The Anderson Plant has over 80,000 spindles and almost 2,000 looms in two separate buildings near each other. The conveyor system runs along the outside of both of the two buildings.

One Conveyor Services Two Mills

Mill No. 1 is a complete carding, spinning, and weaving mill. It has spooling, warping, and slashing but does not have a cloth room.

Mill No. 2 has carding, spinning, weaving, and a cloth room but does not have spooling, warping, and slashing.

Therefore yarn, slashed warps, and cloth are constantly moved between the two buildings with the new conveyor system.

Filling-conditioning equipment is in one end of Mill No. 2, and filling from both mill spinning rooms is moved to the conditioning room with the conveyor. Then filling is moved again with the conveyor to the two mill weave rooms.

In-Plant Materials Are Moved

In addition, all yarn and cloth between departments in each mill are moved with the conveyor. And most materials formerly transported between floors by elevators are now moved outside the mills with the system.

If a given yarn number or roving number being made in one mill is needed in the other, the yarn or roving is moved with the conveyor. Therefore, during a shift's operation, the conveyor often moves card sliver, roving, yarn, slashed warps, cloth, and empty bobbins, spools, yarn beams, and cores for cloth.

One conveyor operator on each shift is the only employee needed to move all of the material.

The conveyor system was installed at an over-all cost of $75,000. Steel derricks for the system were built by an outside construction company; the conveyor-system manufacturer installed the monorail; and the mill electrical department installed all electrical equipment, including signals for loading and unloading and limit switches.

One Operator Controls Movements

The conveyor cab and four cars are suspended from the monorail. All controls for the system are in the cab, and the conveyor operates much as an old-type trolley car. The operator is guided in all his movements by a panel board at his finger tips.

The monorail is 1,500 ft. long and reaches heights of 60 ft. at low terrain. At the stations, it is 40 ft. from the rail to the bottom of the stations.

Although the conveyor operates on all three shifts, most hauling is done on the first shift. The cloth room is run only one shift, and therefore cloth is moved from both weave rooms to the cloth room only on the first shift. All cloth woven on the second and third shifts is usually moved within 3 hrs. after the first-shift conveyor operator starts work. In addition, other needed materials are transported during the time.

No records are kept of the total poundage of yarn and other materials moved by the system, but 1¼-million yds. of cloth are handled each week.

CLOTH is unloaded at this station in the cloth room at Mill No. 2. The cloth is put on the trucks by cloth doffers in the weave room and is removed at stitchers. Empty tubes (arrow) go back to the weave room on the same trucks.

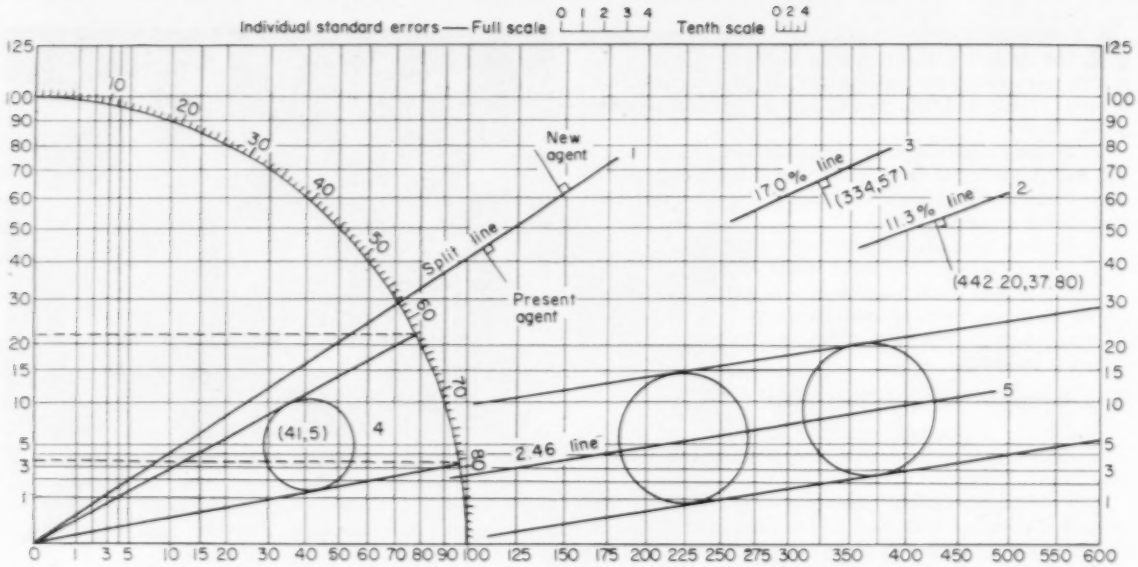
ROVING from the card room is delivered to this spinning room in Mill No. 2. Spun filling yarn is taken to the filling-conditioning room. Spun warp yarn is delivered to the spooling room in Mill No. 1.

System Has Five Central Stations

The system has five central stations for loading and unloading at favorable points of the two mills; and each station services one or more floors of the building. Each of the four cars has a predetermined position at each station, and the system will not operate if the car is not in its correct position. When in correct position, the car can be lowered to any given floor of the mill to be loaded or unloaded.

Trucks regularly used to hold cloth or yarn in a department are rolled into the open car when a door is raised. Signal lights show regular employees in each department when they should load and unload a car. Then other signal lights show the conveyor operator when loading is completed.

Each car has two hoists, each with a capacity of two tons. By leaving the cars at a station and using only the motor cab, machinery is moved with the conveyor. Recently three roving frames were moved from one mill to the other within 4 hrs. The frames were disassembled into three sections for moving.



BINOMIAL-PROBABILITY PAPER is used to solve many textile problems rapidly. The split line may represent the population and is drawn from the origin to a point at the right of the paper. The paired count represents the coordinates or the number of good or defective samples. The standard deviation is read from these two lines.

How Binomial Probability Solved FIVE Wool PROBLEMS

A new tool for textile men, binomial-probability paper can be used to quickly and easily solve problems in—

- **Quality control**
- **Material evaluation**
- **Timestudy**

A study of how these problems were tackled will show the way toward the solution of many other problems in the textile mill

By **ARTHUR J. GAGNON, Jr.,** Argonne Worsted Co.

BINOMIAL-PROBABILITY PAPER, introduced several years ago by F. Mosteller and J. Tukey, is a special graph paper with many useful applications in quality control. We use this paper to solve many problems in our mill and find it a time-saving tool that is easy to use.

The paper has two nonuniform scales. The horizontal scale runs from 0 to 600, and the vertical scale runs from 0 to 300.

When we work out a problem, two main facts are plotted on the paper. One fact is known as the split and the other fact is the paired count.

The split is a straight line drawn from the point of origin at the bottom-left corner of the paper. The line passes through all the points of coordinates to some point on the right of the paper.

If, for example, a sample has 30% of defective items, the split line would be drawn through the point of the coordinate of the sample. The line would also pass through these points—7,3; 14,6; 42,18; 70,30; and 280,120. This line is known as a 70,30 split and also as a 30% line.

The paired count is the coordinate of a sample arranged into a number of good items and a number of bad items or a number of accepted tests and a number of rejected tests. For example, if 5 tests out of 25 exceeded a standard, the paired count would be plotted as 20,5.

The upper left-hand scale of the paper is divided into units of standard deviation, and 5 mm. is approximately equal to one standard deviation.

A perpendicular line is drawn from the split line to the paired count. The perpendicular distance is then transferred to the upper left-hand scale of the paper for conversion into standard units. Measuring is best done with a mechanical divider.

Paired counts that are greater than the scale of the

abscissa and ordinate or over 600 and 300 may be plotted on the one-tenth scale. For example, a paired count of 218,776 can be plotted as 21.8, 77.6. However, the upper right-hand scale must be used to convert the perpendicular distance into standard units.

Here are details of five problems that we solved with binomial probability paper:

Problem 1—Scouring

The first problem was to determine the effectiveness of a new scouring agent. A usual lot of common-grade wool was divided into two portions. Each trial lot was run on a large and small scouring train.

The fixed total of the sample was 300 grease tests for each scouring agent. The number of tests that exceeded our standards from the first 150 tests made on the large train was 133 with the new agent and 119 with the present agent. The small train showed that 78 tests with the new agent and 34 tests with the present agent exceeded the standard.

We wanted to know if the discrepancy between each scouring agent was significant. The paired counts are 133,78 and 119,34. The split is the bisector of the angle made by the two paired counts.

The entire range or the sum of the two perpendicular distances are measured. The total range is about 22 mm., which is significant at a chosen level of 2 sigma.

The results of this test showed us that the present scouring agent is controlled more efficiently than the new agent.

Problem 2—Combing

The second problem concerned a combing operation. An operator tending six French combs with 24 doublings per comb had a creeling time of 11.3% of the workload. The creel package was increased from 10.5 to 15.75 lbs., and the doublings were reduced from 24 to 12.

A sample timestudy showed an average creeling time of 37.8 mins. per 8-hr. shift. We wanted to know if the improvements were significant.

The split 88.7, 11.3 is marked on the paper to form the 11.3% line. The paired counts 442.2, 37.8 are located and bisected with a perpendicular line drawn from the 11.3% line.

The perpendicular distance is about 13 mm. or about 2.6 sigma. This figure is greater than our chosen significant level of 2 sigma; so the sample timestudy shows that the improvements could be termed significant. With further improvements, the workload was later increased from six to eight combs per operator.

Problems in frequency studies can be solved with the same procedure.

Problem 3—Quality Control

As part of our quality-control program, many samples of sliver are taken from French combs every day. Tests are then made to determine whether the neps and foreign matter are above or below our prescribed standards. Fixers are then notified about the combs deviating from standard, and tests are taken after corrections have been made.

The combing lots averaged 17% rejections because of excessive neps or pieces of foreign matter. From a random sample of 391 tests, 57 were rejected according to our standards. We wanted to know if this lot is better than the current average.

The split 83,17 is made along the 17% line, and the paired count read as 334,57. The perpendicular distance from the split line is about 6.4 mm., which is about 1.3 sigma. Because the distance is less than our chosen significant level of 2 sigma, this lot was not considered better than the current average.

Lot No.	Lot size	Bad	Good	Paired count
1	1,240	41	1,199	119.9, 4.1
2	340	5	335	335, 5
3	160	3	157	157, 3
4	440	12	428	428, 12
5	1,560	30	1,530	153, 3
6	560	9	551	551, 9
7	320	6	314	314, 6
8	485	25	460	460, 25
9	360	7	353	353, 7
10	600	11	589	589, 11
	6,065	149	5,916	

CHART with varying sample sizes is made out. Then the gross number of samples, the number of good samples, and the number of bad samples are totaled. The number of bad samples is then calculated as a percentage of the total number of samples.

Problem 4—Yarn and Roving

Here's how we used binomial-probability paper to test yarn-size variations:

A total of 46 size tests were recorded on our process sheets for a 1/30s yarn. This yarn was a 60-40 wool-cotton blend, and five tests exceeded a range of $\pm 1\frac{1}{2}$ yarn numbers.

We wanted to find the possible range of variation in which the true percentage rejection will lie at 95% confidence limits. The paired counts 41,5 were plotted on the paper, and a two-sigma circle was constructed. Here's how to work from this circle:

Draw two straight lines from the point of origin tangent to both sides of the circle and extend the lines to the large quadrant. From each point of the quadrant, draw a horizontal dotted line to the ordinate.

Read the range on the ordinate, which for this problem is 3.7 to 22%. The customer may expect a variation range of 3.7 to 22% in which the true percentage rejection will lie.

Average linear variations were also worked out on binomial-probability paper. A total of 40 tests were made on an evenness tester from random samples of roving. Three tests exceeded our process capability standards.

We wanted to find the possible range of variation in which the true percentage test rejection will lie at 95% confidence limits. Can our boss spinner expect this lot of roving to vary above our average linear variation standards?

The paired count is 37,3 and the range to be expected is worked out to 1.4 to 18%.

Problem 5—Testing

To find materials that are out of control, we make out a chart with varying sample sizes. The inspection can be on yarns from bobbins, cones, or pirns. The total number of bad packages are calculated as an average of the total number of packages tested.

Suppose the average of bad samples to the total number of samples is 2.46% and the split is 97.54, 2.46. Two evenly spaced three-sigma circles are constructed on the 2.46% line. A straight line is drawn tangent to each side of the circles.

Paired counts that fall outside the limits formed by the two outside lines are considered out of control. For ex-

CONTINUED ON PAGE 170

INSPECTORS use both overhead and under-table lighting to inspect the cloth.

Eagle & Phenix CLOTH ROOM Has Streamlined Layout

Cost and seconds have been reduced to a minimum in the cloth room at Eagle & Phenix Div., Reeves Bros., Inc., Columbus, Ga. This cloth room has—

- Mechanical conveyors
- Motorized inspecting tables
- Complete records system
- Close liaison with the weave room

THE CLOTH ROOM at Eagle & Phenix Div., Reeves Bros., Inc., Columbus, Ga., uses assembly-line methods to keep the cloth moving. Cloth is delivered directly to the cloth room when it is doffed from the loom. No backlog of cloth is permitted to build up in the weave room or in the cloth room.

CLOTH that contains defects gets a second inspection after it is folded.

Fast processing has a number of advantages. The most important advantage is in the control of second-quality cloth. On a variety of fabrics made in the mill, such as sateen, combed cord suiting, twill, plaids, and corduroy, the total seconds are held to a low figure.

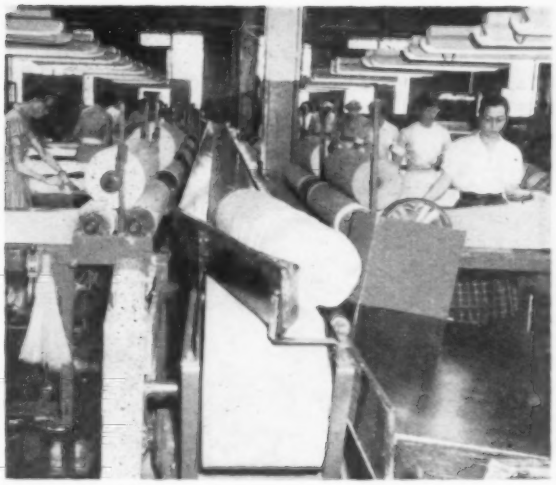
Cloth is doffed from the looms in rolls of 170 to 200 yds. and delivered to the cloth room on trucks. Rolls are placed in cradles at the ends of the 24 inspecting tables.

Two rubber-covered rolls, powered by an electric motor, pull the cloth across the table. The inspectors control the movement of the cloth with a foot pedal, leaving both hands free.

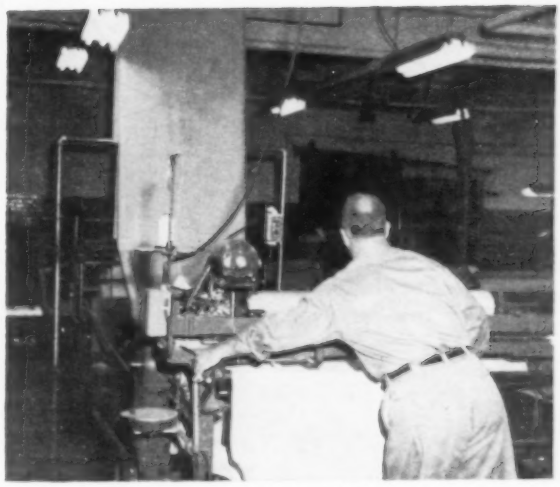
A section of the inspecting table is covered with opal glass. Fluorescent lamps beneath the glass furnish illumination for see-through inspection. Overhead fluorescent lamps are used to inspect and burl most of the cloth.

Cloth that requires inspection on both face and back is returned to the cradle, reversed, and run a second time.

Grading is done by the point system. Each inspector



BELT CONVEYOR transports inspected cloth to the loading platform in the foreground.



ROLLING MACHINE puts the cloth up in large rolls containing 800 to 1,000 yds.

has a list of major and minor defects and also a maximum allowance of defects for a cut of cloth.

Cloth Is Moved by Conveyor Belt

The tables for first inspection are arranged in two lines, 12 tables on each side. A conveyor belt runs between the lines of tables. When a roll of cloth has been inspected, it is pushed onto the conveyor belt. The roll is carried to the end of the belt and dumped onto a platform.

An operator loads the rolls of cloth onto trucks, keeping them segregated by styles. As soon as he has accumulated enough rolls of a particular style, he pushes the truck to the rolling machines.

Second-quality cloth and any cloth that is to be baled is delivered to the folders. Most of the cloth is put up in rolls of 800 to 1,000 yds. Bales contain 1,400 to 1,500 yds.

A nonpowered roller conveyor transports the cloth from the rolling machine to the scales. Here each roll is weighed, recorded, and wrapped. It is then removed to the warehouse.

Seconds Are Kept to a Minimum

The Eagle & Phenix cloth room plays a big part in keeping weave-room seconds to a minimum. The two departments work together to have cloth inspected as soon as possible after weaving. E. E. Gantt, overseer of the cloth room, says:

"Many cuts of seconds are what we call repeaters. When there is a delay between weaving and inspecting, a loom that has produced a roll of seconds will have many yards of seconds woven on a second roll before it is detected. We prevent these repeaters as much as possible by inspecting all the cloth as soon as it comes from the loom. We deliver a report to the weave-room overseer immediately when defects are found."

Each inspector has a pad of report forms; and when defects are found in the cloth, she fills out a report. These reports list the date, time, loom, and type of defects and have a space for both the fixer and foreman to sign.

Defective Looms Are Checked

The seconds reports are delivered to the weave room within an hour after the cloth is inspected. Loomfixers and supervisors give the reports priority over other repair and maintenance jobs.

The cloth room also makes other reports, both daily and weekly. Production is broken down into both yards and pounds by different styles, constructions, and quality classifications.

The weave room is kept informed of the quality status of each loom, weaver, room, and shift and of the total production at all times.

With its streamlined methods, the cloth room handles 600,000 yds. of cloth per week. Each cut of cloth receives prompt, individual attention but there is no bottleneck.

Gray Room

Date 1-15-58

Time 10:15 AM ✓ PM

Weave Room #1

Loom No. 213 is now making

Kirby selling end

jerk-ins

Corrected by Fixer Jones

OKayed by Foreman [illegible]

Date 1/15/58

Time 12:30 AM PM ✓

Form 31

REPORT is made for every cut of second-quality cloth and is sent to the weave room as soon as possible.

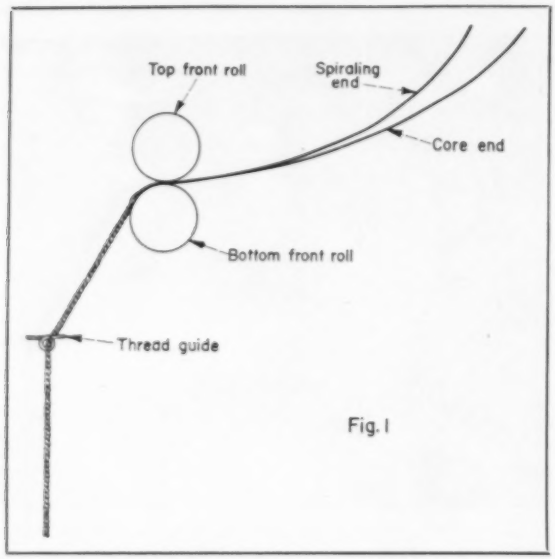


Fig. 1

SPIRAL-TWIST YARN made on one line of rolls requires minimum frame modification.

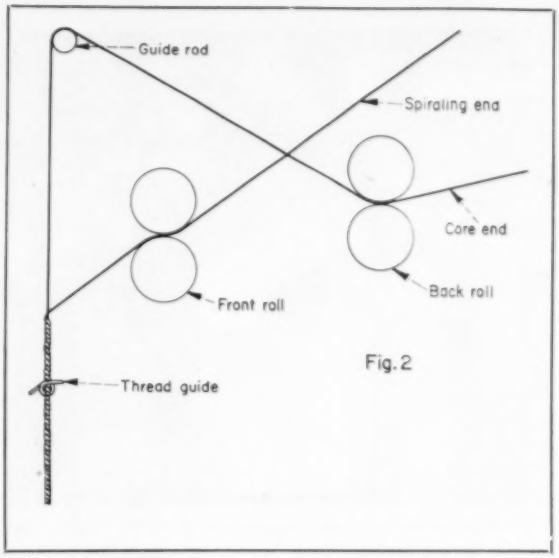


Fig. 2

TWO LINES OF ROLLS produce a better-balanced spiral-twist yarn. Either S or Z twist can be used.

Make TWISTED NOVELTY YARN On Surplus Spinning Frames

If you have some extra spinning frames and are looking for new markets, here's how to make—

- Spiral-twist yarn
- Gimp yarn
- Twisted slub yarn
- Spot yarn
- Cover yarn

By **GEORGE B. PEELER,** Superintendent, Gold-Tex Fabric Corp.

MANY DIFFERENT KINDS OF TWISTED NOVELTY YARNS can be made by modifying a surplus spinning frame for twisting. The cost is nominal, and the conversion can be made without difficulty by any plant that has a good mechanic and a well-equipped shop.

The basic parts needed depend upon the frame to be converted and the kind and quantity of yarn to be made. Among the parts required are square-neck rolls for most yarns (synthetic-covered top rolls are usually best), a stock of large twist gears, two or three sets of gears for very low twist, over-running clutch gears for some yarns, extra-hard thread guides, sprockets, chains, oil rings, creels for spools, and steaming bobbins.

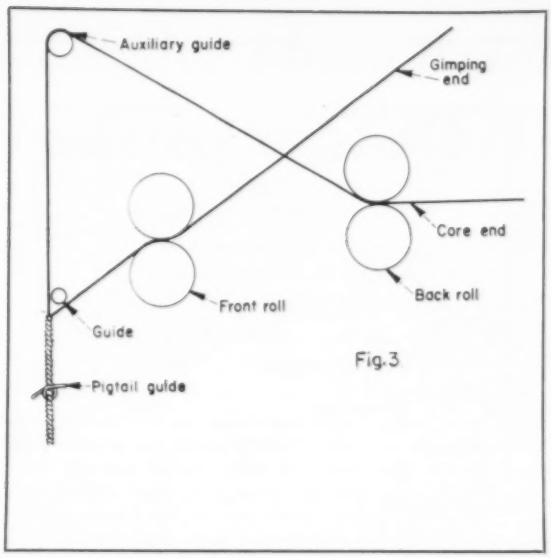
A plant having these parts and the know-how can make a wide range of twisted novelty yarns, such as spiral, twisted slub, nub, gimp, ratiné, seed, and spot yarns. The variety that can be made is limited only by the imagination and patience of the management.

The cost of making novelty yarn is determined by the number of processes required to produce the desired effect. For some, only one operation is necessary; for others, two or more operations are necessary. Most plants using converted spinning frames find the cost to be competitive, and usually good-quality yarn is produced.

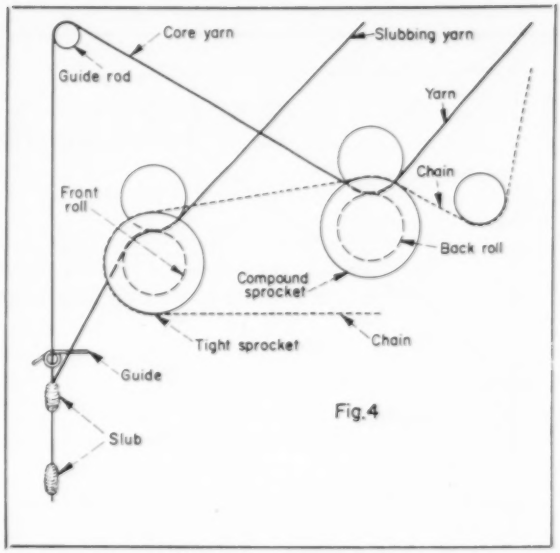
Spiral-Twist Yarn

This yarn is the easiest to make and requires the least amount of frame conversion. The yarn can be made on either one or two lines of rolls, and it usually is made from two yarns of different size. The core yarn normally has a smaller diameter than the spiraling yarn.

For best results, the core yarn should have greater elasticity than the spiraling yarn, and the twist of both yarns should be so balanced that the two yarns break simultaneously after they are twisted together. The best



GIMP YARN requires two lines of rolls. One or two core ends are twisted around one gimp end.



TWISTED SLUB YARN requires a sprocket-and-chain arrangement to regulate the delivery of core yarn.

twist is determined by trial and error.

There are a number of ways to produce spiral yarns. Here are two methods:

Spiral yarn can be made on one line of rolls as illustrated in Fig. 1. When the yarn is made by this method, the spiral end can be either S or Z twist; the core yarn should be twisted in the opposite direction.

The two yarns are twisted in the same direction so that twist is taken out of the spiraling end and added to the core end. This action causes the spiral effect.

Care should be taken to see that the original twist of the core yarn is very low and that the spiraling end has a higher twist. The reason is that when the core yarn is twisted twist-on-twist and the spiraling end is twisted twist-off-twist, the result is a better-balanced twist for both yarns.

Method Is Versatile

A spiral yarn made on two lines of rolls is shown in Fig. 2. This method is more versatile than the first method, and it gives better control of the yarn.

The method also permits the use of different size yarn for core and spiral and it allows the use of yarns with the same direction of twist.

Gimp Yarn

This yarn, a variation or derivative of spiral-twist yarn, is made in practically the same way as spiral-twist yarn. Two lines of rolls are required, and usually two core ends are used. The gimp end is fed between the two core ends that twist around it and hold it in place. This arrangement gives good results by preventing skin-backs and holding the gimp yarn in position.

The core ends are delivered from the back rolls and pulled over the auxiliary guide. The gimping end is delivered from the front rolls and it meets the core end under the thread guide or gimping bar. A better gimp is produced if the gimping bar is set close to the core yarn. The greater the distance the bar is set from the core yarn, the more ragged and ruffled the gimp will be.

The amount of gimp or surplus yarn delivered from the front rolls in relation to the amount of core yarn delivered from the back rolls is determined by the end product desired. Some experimenting is required.

The ratio of delivery between the front and back rolls can be changed by altering the drafting gear train that controls the back-roll speed.

Twisted Slub Yarn

This yarn is the basic yarn for many novelties. There are variations known by names such as spot, seed, etc., based on the length and type of slub used.

There are several methods of making twisted slub yarn; two are illustrated in Figs. 4 and 5. Both methods are readily adaptable to the spinning frame and make good yarn. Although basically the same, each method has its advantages and disadvantages.

The first method, illustrated in Fig. 4 delivers the core yarn from the back rolls and the slubbing yarn from the front rolls. The slub yarn meets the core yarn under the thread guide.

The slubbing arrangement consists of a tight sprocket fastened to the foot end of the front rolls and a compound sprocket attached to the back rolls. Power is transmitted from the front rolls to the back rolls through a chain that passes over the tight and compound sprockets.

Square-Neck Rolls Stop Blacklash

The chain is pegged for delivery of core yarn with the pegs left out where the slub is to be formed. Core-yarn delivery is stopped while the slub is being formed. Square-neck rolls for both front and back lines are used to prevent backlash.

In this method, the back rolls are stopped while the slub is formed on the core. The interrupted delivery lowers production, which is the major drawback of the method. An excellent yarn is produced, however, which may offset the lower production to some extent.

A second method of twisting slub yarn is illustrated in Fig. 5. With this method, an over-running clutch and crown gear replace the regular crown gear of the spinning frame. The arrangement permits a constant delivery of core yarn, and production is higher.

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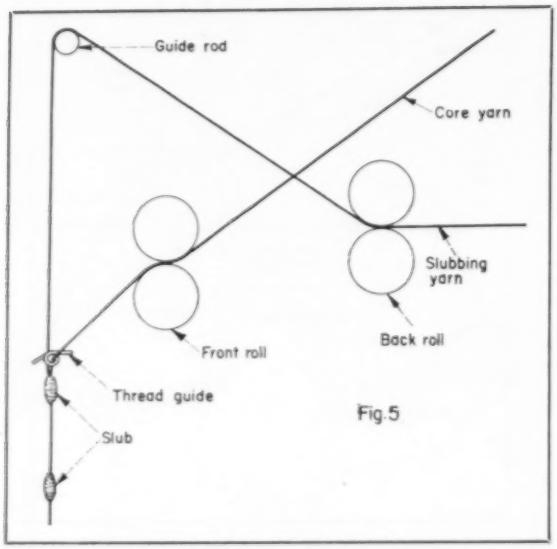
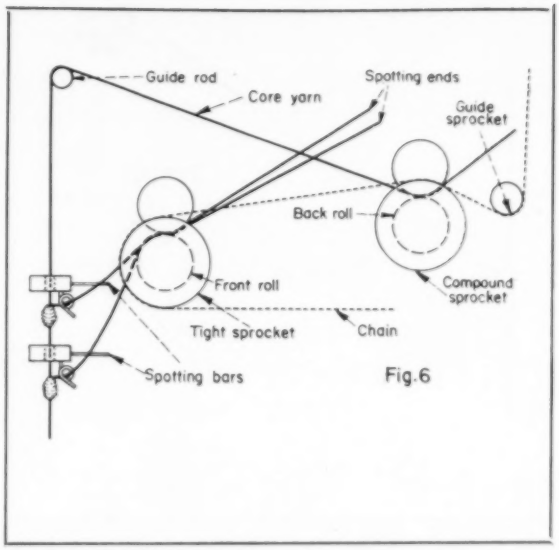


HIGHER PRODUCTION of twisted slub yarn is possible by using this roll arrangement and an over-running clutch gear.



SPOT YARN is made with two spotting bars that guide the spotting ends around the core yarn.

Production Is Speeded Up

The over-running clutch permits acceleration of the back rolls and delivery of an increased amount of slubbing yarn. This yarn passes over the guide rod and forms a slub around the core yarn after the core is delivered from the front roll. The slubbing yarn meets the core yarn under the thread guide.

This method requires a tight sprocket fastened to the foot end of the front roll; and power is transmitted to the back roll through a chain and compound sprocket. The chain is pegged where the slub is desired and left blank where no slub is to be put in the yarn. The chain-and-sprocket arrangement is the same as shown in Fig. 4.

Spot Yarn

This yarn is made by using yarns of different color or yarns that give different colors when cross dyed. Spot yarn is a variation of twisted slub yarn, and it is made in much the same way. Equipment required is basically the same. There are various methods of making spot yarn; one method is illustrated in Fig. 6.

Although spot yarn can be made with as many colors as there are spotting bars on the frame, there is a problem of controlling the spotting end if too many bars are used. Generally, two spotting ends are about as many as can be used successfully.

Back Rolls Deliver Core

Core yarn is delivered from the back rolls and passed over the guide rod as shown in Fig. 6. The core yarn then joins the spotting yarn at the spotting bars or guides. Spotting ends are delivered from the front rolls and come in contact with the core yarn at the spotting bars.

The back rolls receive their motion from the tight sprocket fastened to the foot end of the front rolls and the compound sprocket fastened to the foot end of the back rolls. The chain, which passes over these sprockets, is pegged solid for delivery of the core yarn; the pegs are left out where the spots are to be formed.

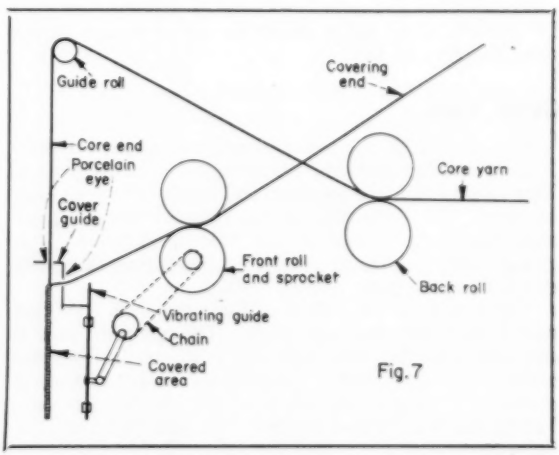
The spots or unpegged places in the chain stop the delivery of the core yarn while the spotting rolls (front) continue the delivery. This action covers the yarn and causes the spots. If a long spot is desired, it may be necessary to have vibrating spotting guides. The effect desired determines the amount of spotting yarn delivered and the length of chain required.

Spot yarn also can be made by using the over-running clutch crown gear. When this method is used, the core yarn is delivered from the front roll and the spotting ends come from the back roll. Equipment for the over-running clutch method is easy to rig and gives continuous delivery of yarn.

Cover Yarn

Cover yarn is made the same way as spot yarn and is generally a variation of the latter. However, some cover yarns have a continuous-cover effect. There are various reasons for covering a core yarn; some are for strength and others are for effect. If a continuous-cover yarn

CONTINUED ON PAGE 167



COVER YARN is made by delivering the covering end from the front rolls and the core end from the back rolls.

Consider These Points To Select a SLASHER DRIVE

• The type of slasher drive needed and the horsepower required depend on a number of factors. The type of yarn and its requirements during the slashing operation should be understood and evaluated before the drive is selected.

THERE HAVE BEEN MANY IMPROVEMENTS in the power drive of slashers in the last decade. The aim has been better tension control, speed control, simplicity of operation, reduced maintenance, and long service.

It is now possible to obtain a drive that will meet just about any slashing requirement. But the selection of the proper drive depends on a clear understanding of the requirements of the yarns to be processed on the particular slasher.

The primary requirement of a slasher drive is to apply tension where it is required and then to control this tension so as to properly dry, split out, and wind the warp on the loom beam. With the introduction of man-made-fiber yarns, the tension requirements have broadened. The old rule of 1 to 2% stretch can no longer be used.

It is not uncommon to run into a total stretch of as much as 10 to 12%. On the other hand, some of the filament yarns require a negative stretch or shrinkage allowance during slashing.

Based on a paper presented to the American Society of Mechanical Engineers by George Manning, Assistant Chief Engineer, Cocker Machine & Foundry Co.

Where Tension Is Controlled

On a conventional multicylinder slasher, it is necessary for the slasher drive to control tension at three basic points:

1. Between size box and cylinder sections
2. Between cylinder section and delivery rolls
3. Between delivery roll and beam take-up

On a modern slasher, complete control of the slasher speed at all times is desirable. Control of running speed, acceleration and deceleration, and creep speed is needed.

Since all items listed for stretch control and speed control affect the horsepower required for the slasher, it is imperative to learn something of these requirements before selecting the drive.

The relationship between yarn tension and yarn stretch does not remain constant throughout the slashing operation. Most yarns follow Hook's law of elongation: that for each unit of tension force applied, a definite unit of elongation occurs up to the yield point.

Yarn Is Normal at Two Places

In a slashing operation, the yarn is in a normal state at only two places: the entering roll of the size box and between the delivery rolls and the loom beam.

During the rest of its stay on the slasher, the yarn is boiled, stretched, cooked, and jerked about. Different yarns react in different ways to this treatment.

The creel to size-box tension is independent of the size-box drive, but it does have an affect on stretch. Unless a positive let-off creel is used, a certain amount of tension is required to pull the yarn out of the creel.

Since it is necessary to stop the creel at the same rate the slasher stops, brakes are used. The brakes add to the dead-weight load and increase the tension between the size box and the creel. Brakes are now available that allow free wheeling during operation and are applied only as needed during deceleration.

Horsepower Required Will Vary

The horsepower required to pull the yarn out of the beam creel will vary, depending on the number of beams, the amount of braking, and the operating speed.

Tension between the size box and the drying section is generally considered in terms of stretch. We've had experience with a stretch range of −2% up to +12%. The stretch is entirely dependent on the yarn requirements. Holding a negative stretch may require more tension on one type of yarn than having a positive stretch on another type requires.

The area between the size box and the drying section is a critical one. After the yarn is immersed in the hot sizing compound, some change takes place in its elastic characteristics. Some yarns become stronger, some weaker, some attempt to shrink, and

CONTINUED ON PAGE 174

In slashing yarn, tension is generally expressed in grams per end and yarn speed in yards per minute. Therefore, to express horsepower in an equation form, using gram tension and yards per minute—

$$\text{Hp.} = \frac{\text{x (yarn speed in yds. per min.)} \times \text{3 ft. per yd.}}{\text{453.6 grams per lb.} \times \text{33,000 ft.—lb. per min. per hp.}}$$

$$\text{or Hp.} = \frac{TS}{4{,}989{,}600}$$

Where: T = total tension in yarn
S = yarn speed in yds. per min.

Thus, the horsepower to pull 5,000 ends of yarn at 40 grams tension per end at a speed of 75 yds. per min. is—

$$\text{Hp.} = \frac{(5{,}000 \times 40) \times 75}{4{,}989{,}600} = \frac{15{,}000{,}000}{4{,}989{,}600} = 3.01$$

HORSEPOWER NEEDED for the slasher drive can be computed with these equations.

This Checklist Will Help You Reduce Variation at the COMBER

• If you comb long-staple cotton, here's a checklist developed and used by Rhyne-Houser Mfg. Co. that may help you reduce variation and get more efficiency out of your combers

BECAUSE OF INCREASING COMPETITION from man-made fibers and foreign mills, spinners of fine combed yarns are tightening up their operations wherever possible.

Here, for example, is how Rhyne-Houser Mfg. Co., Cherryville, N. C., a manufacturer of fine yarns from blends of Sak cotton and man-made fiber, sets and maintains its Nasmith combers to produce a 48-grain sliver at 84 nips per minute.

1. **Time the back roll** to turn at Index 1 on the cam. Be sure the cam is not worn. Spot the stud at Index 37½ for good piecing.

2. **Set the leather rolls to the top comb** as close as possible without hitting.

3. **Set the leather rolls** to back off at Index 20 or 21. This setting is made at the nut opposite the timing nut on the large cam.

4. **Be sure that the brackets** next to the nipper-knife springs are flush with the frame. If the brackets are too high or too low, they will cause the head to bind.

5. **Check the back detaching-roll gear** while the comber is running to see if it is backlashing. If there is backlash, the cam may be worn, the clutch cam may be worn out, or the clutch is not opening properly. If the clutch is not opening, adjust it at the clutch cam with the two small bolts located there.

6. **Check the nipper knives** and see that they step Gauge 15 at Index 19. Set each head to take out as nearly as possible the same percentage of noils. Be sure the lifting spoons and bowls are not worn.

7. **Set the aspirator** so that the damper will be at the edge of the aspirator chute. Clean the aspirator once a week.

8. **Set the leather detaching rolls** parallel to the steel detaching rolls.

9. **Check the draw-box rolls for wear** at the necks and flutes and for alignment and binding. See that calender rolls are aligned.

10. **Be sure the top comb** is lifting at Index 11.

11. **Check the chain drives.** If they are not tight, the draw-box web will jump or lag at the trumpet.

12. **Inspect all leather rolls.** Polish the table, trumpets, spoons, and tumblers. Check the slide bar and arm for wear.

13. **See that the sector-arm teeth** are not too deep or too shallow in the clutch and that they are not worn.

14. **Inspect and raise the brushes** (every six months), and set new ones at 4⅛ ins. Coated half laps mean that the brushes need replacing or resetting.

15. **Set the feed rolls** 1 in. from the lip of the cushion plate. Remove chokes, and see that the rolls do not bind. Polish the plates, and check the condition of the aprons.

16. **Set the table calender rolls** as close as possible to the trumpet.

17. **Check all over for worn bearings,** especially at the draw box, shafting, and gears in the head.

18. **If the web is curly,** check newly installed brushes and clean and rent them. If the brushes are not the cause, see if the damper is set close enough.

19. **If the damper is set too close,** noil web will wrap around the aspirator. If the damper is crooked, the web will be intermittently curly at the head where the bend is greatest. A break in the pipe to the fan also can cause a curly web.

20. **Trumpets that are rough, dirty, or too small** can cause trouble. Where the trumpets alone are at fault, different defects show up at different heads. If the heads feed too fast, the speed needs adjusting.

The cleaning schedule for these combers is:

1. **Clean draw-box rolls** on five combers each shift.

2. **Pick top combs** on all combers once each shift.

3. **Brush tops of tables** and under sliver pan and table on all combers each shift.

4. **Brush all motors** immediately after cleaning under tables each shift.

5. **Wipe brush bearings with waste** on five combers each shift.

6. **Brush backs** once each shift.

7. **Wipe top of table** on all combers each shift.

8. **Brush motors a second time** each shift, and remove waste cans; sweep under combers.

9. **Brush top comber-lap rolls and creel rods** the last hour of each shift.

10. **Stop one comber at a time,** and wipe rocker arm and back with waste each shift.

11. **Stop combers** and brush top and bottom of the draw box clean once each doff. Brush top combs while the comber is stopped.

For every production run . . .

keep your weaving schedules on time

with Clinton Products

For every warp-sizing job, you can rely on Clinton corn starches. These products yield sizes with uniform viscosity that produce the same results every time, because:

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Your Clinton salesman can help you select the right starches to produce the sizings you want. And, should you need special production advice, *prompt* technical service is available when you need it. Call your Clinton salesman today, or write:

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COLUMBIA-SOUTHERN CHEMICALS HELP SHAPE

IDEAS ON DISPLAY . . . watched every day by the management team building and selling successful products. Their responsibilities range from research and design to marketing and delivery.

These men and women make the profit-creating decisions for going, growing businesses . . . textiles, petroleum products, paper, metals, plastics, food, glass, soap, foils and wraps, chemicals, pharmaceuticals, cosmetics, rubber goods, disinfectants and cleansers. A vital part of their jobs is spotting and applying new trends in materials selection, processing, and handling that produce better goods at lower cost.

The versatile basic chemicals are deeply involved in the style changes continually reshaping almost all products and processes. Columbia-Southern, a leading producer of these essential industrial chemicals, can be a big help to your business as both supplier and technical adviser. Call Columbia-Southern with your next order. You'll soon see why Columbia-Southern chemicals, research, service, and technical assistance help shape profitable futures for products. The Columbia-Southern Chemical Corporation, One Gateway Center, Pittsburgh 22, Pennsylvania. Offices in principal cities. In Canada: Standard Chemical Limited.

$NaHCO_3$—Sodium Bicarbonate • $CaCl_2$—Calcium Chloride • Na_2SO_4—Sodium Sulfate
KOH—Caustic Potash • CCl_4—Carbon Tetrachloride • NH_3—Anhydrous Ammonia

Caustic soda and chlorine, basic Columbia-Southern chemicals, are used throughout many industries . . . textiles, for one.

THE FUTURE FOR SO MANY PRODUCTS

LOOK AT Cl_2—CHLORINE

Highly reactive chlorine's transforming touch creates thousands of molecular regroupings necessary to economical processing of products ranging from solvents to plastics, wonder drugs to refrigerants.

LOOK AT Na_2CO_3—SODA ASH

This versatile alkali serves as basic raw material or essential "refiner" in the manufacture of glass, chemicals, detergents, ferrous and non-ferrous metals, pigments, soap, textiles, paper and many other items.

LOOK AT NaOH—CAUSTIC SODA

Petroleum producers and cellophane manufacturers, textile and rubber makers, businesses by the dozens put caustic soda's voracious appetite to work "eating" away unwanted organic or inorganic compounds.

LOOK AT H_2O_2—HYDROGEN PEROXIDE

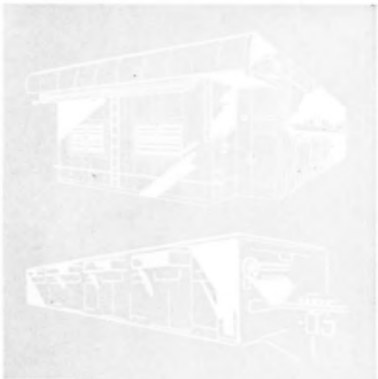
One of Columbia-Southern's newer products, this compliant chemical has a range of reactions that permits its use for bleaching paper and textiles, as a rocket propellant, as a reagent in organic syntheses.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION A Subsidiary of Pittsburgh Plate Glass Company

HCl—Muriatic Acid • $TiCl_4$—Titanium Tetrachloride • $Ca(OCl)_2$—Calcium Hypochlorite
Chlorinated Solvents • Chlorinated Benzenes • Agricultural Chemicals • Chrome Chemicals

Two Reasons Why the Textile Industry Looks FIRST to "NATIONAL"...

FOR THE MODERN WAY TO MEET ALL ITS DRYING EQUIPMENT NEEDS



Leadership IN DRYING TECHNOLOGY PROGRESS

During the past thirty-seven years, "NATIONAL" research and design engineering have given to the Textile Industry consistently new concepts of drying procedures and equipment. Drying speed, efficiency and quality of textiles in all forms—from fibre to finished goods—have been revolutionized due in large measure to the patented features of "NATIONAL" design and construction.

One Source FOR ALL TYPES OF DRYING EQUIPMENT

The list of "NATIONAL" dryers and conditioning units covers the full range of the Textile Industry's requirements—Piece Goods, Print Goods, Tenter, Roll, Carpet, Skein, Yarn, Rayon Cake, Package Yarn, Stock and Swatch Dryers; Nylon Heat Setting Machines.

Case histories of typical installations in the categories mentioned above will be gladly submitted upon request.

THE DRYING MACHINERY COMPANY

LEHIGH AVE. and HANCOCK ST., PHILADELPHIA 33, PA.

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Cable Address: "NADRYMA"—W. U. Code

This Month in . . .
TEXTILE CHEMICALS

Why Dye Mixtures Misbehave—

The reason a dyer often does not get the results he expects when two or more dyes are mixed is that the dye molecules may be reacting with each other. Such interaction can affect the shade, dyeing time, leveling, and color exhaustion.

These findings came in a study of 30 direct azo dyes, all sulfonic-acid derivatives, reported by the National Bureau of Standards.

Three factors affect dye interaction:

1. Chemical constitution is important. Dyes that are similar in their terminal grouping show additive spectra, indicating that interaction is low. If the dyes have central sulfonic-acid groups, steric hindrance is thought to inhibit interaction and produces additive spectra.

2. Dyebath assistants such as nonionic detergents present at 0.1% concentration will inhibit interaction between dye molecules.

3. The salt content of a dyebath and the dye concentration are also affecting factors. Salt promotes aggregation of molecules, which may tend to increase interaction. Heavy concentrations of dye also produce spectral changes that indicate interaction between dye molecules.

Film Absorbs Ultraviolet—

Fabrics exposed to unusual amounts of sunlight can be protected from ultraviolet degradation by a new process developed in Germany.

The materials are sprayed with a compound described as a mixture of nitro compounds and acetate, which deposits a colorless transparent film on the surface of the goods.

Although the film is only 01.5 mm. thick, it is claimed to absorb 99.6% of ultraviolet rays and materially reduce color fading and loss of tensile strength.

Resins Identified Quickly—

The Army has developed a series of tests that quickly identify resins used in coatings. Textile finishers will be most interested in **PB 131292, Rapid Detection of Urea- and Melamine-Formaldehyde, Isocyanate, and Urethane Resins in Coatings.**

To detect urea- or melamine-formaldehyde resins in alkyd or other coating materials, samples are refluxed in a mixture of acetic anhydride and acetic acid containing a small amount of p-dimethylaminobenzaldehyde. Isocyanate and urethane resins are identified by refluxing in glacial acetic acid.

The full report is available from Office of Technical Services, U. S. Dept. of Commerce, Washington, D. C., at 50¢ per copy.

Please turn the page

This Month in . . .
TEXTILE CHEMICALS

Drycleanable Neoprene—

A special neoprene has been developed that resists the deteriorating effect of the most common drycleaner's solvents.

Manufacturers of elastic webbing have long been confronted with the problem of producing a product that would retain elasticity after exposure to Stoddard solvent or perchlorethylene.

The United Elastic Corp., Easthampton, Mass., working with Du Pont chemists, has succeeded in producing a neoprene-base thread that withstands drycleaning in either solvent.

Cotton Improved at Low Cost—

Chemically treated cottons can compete with man-made fibers in cost and offer many new and useful properties at the same time, according to C. H. Fisher, head of the Southern Utilization Research and Development Div., U. S. Dept. of Agriculture, New Orleans.

In a report to a recent Textile Research Institute meeting, Dr. Fisher presented costs of modifying cotton by acetylization, cyanoethylation, and hydroxethylization, among others. Figures obtained from experimental work indicated that on a production basis partially acetylated yarns can be sold at $1.04 per lb. if processed continuously and at $1.11 per lb. if produced in batches.

Fully acetylated cotton with an acetyl value of 40.6% can be produced to sell at $1.22 per lb.

Advantages of the chemically modified cottons include low raw-material costs and considerable versatility in the possible new effects that can be created by chemical modification.

Wash-and-Wear Rayon Next?

Rayon will soon get into the wash-and-wear act, according to reports from Courtaulds (Ala.), Inc. Geoffrey V. Lund, manager of textile research and development, reported at a recent Textile Research Institute meeting that rayons offer many possibilities in this field.

Research work during the past three years has shown that while the resin content of rayons must exceed that of cottons for equal results, the effect of resins on the tensile strength of rayon fabrics is less than that on cotton. Resin-treated rayons are also less affected by chlorine than are similarly finished cottons, and color problems are simplified by spun-dyed yarns.

In predicting the possibilities of resin-finished rayons, Mr. Lund pointed out that rayon fabrics can be produced in a wide variety of effects and emphasized that proper construction is important for satisfactory performance. Amino resins, hand-builders, and silicones in mixtures have shown promising results in trials.

Vapor-Phase Coating—

If wet, stretched cotton yarns are exposed to acrylonitrile vapor, polymers are formed within and on the fiber surfaces. The result is a gain in breaking strength up to 160% of the untreated control plus excellent resistance to rot and good resistance to acids or flat abrasion.

The treatment does not extend to the core of the fibers; but in weathering tests, treated yarns required over four months' exposure to reduce their strength to that of unexposed, scoured controls.

The experimental work was carried out by the Southern Utilization Research and Development Div. of the U. S. Dept. of Agriculture.

Did You Know . . .

. . . **that the balance between a naphthol base and its coupling component** in a continuous dyeing method can be quickly checked? Once the bath has been set up according to the dye manufacturer's recommendations, hold a piece of naphtholated cloth against the coupled fabric at the delivery end of the coupling section of the range. There should be enough free coupling component on the goods to stain the sample. As is well known, an excess of coupler will produce dull shades that crock easily; too little gives skimpy, poorly penetrated dyeings. (American Cyanamid Co.)

•

. . . **that trouser legs permanently creased by chemical treatment** could soon be a feature in men's wear? One of the larger high-grade suit manufacturers has done some experimenting with the idea. The effect is created by the local application of ammonium thioglycolate followed by pressing to set the crease.

•

. . . **that ultrasonic sound is being used to cut dyeing time** on fibers that are difficult to dye? Reports from Russia claim that with the aid of ultrasonic waves linen can be dyed in 25 mins., compared with 5 hrs. by conventional methods. Sheepskins scoured under the effect of ultrasonics came clean in 10 mins., a process that usually takes an hour.

•

. . . **that recent improvements in processing have boosted the life expectancy of awning fabrics?** Mildew inhibitors are the primary factors responsible for longer awning life. By increasing color content 30%, fading is less and remains more nearly on tone.

In a report to the Canvas Products Assn., Clarence Timmerman of McCampbell & Co. also pointed out that acrylic paints are well adapted to use as a decorative medium. Advantages of acrylics include no local stiffening, good color retention, and fiber protection.

This Month in . . .
TEXTILE CHEMICALS

NEW DYES AND CHEMICALS

Chelating Agent

Versenex 80 . . . is particularly useful in chelating iron ions in peroxide-bleach baths and in the control of iron and other heavy metals in polymerized latices. The product is based on diethylenetriamine, which gives it a high molecular weight. The bonds formed with most metals are stronger and less susceptible to side reactions than ethylenediamine-based sequestrants. Dow Chemical Co., Midland, Mich.

Circle D-1 on Reader-Service Card

Anionic Softener

Lauramine 314-A . . . is recommended for finishing cotton knitting yarns or other cellulosic-fiber products. Suggested primarily as a self-finish, the product does not affect colors or whites, does not turn rancid, and is stable to sodium chloride solutions. The softener works well in neutral or mildly alkaline solutions, but acid conditions should be avoided. Laurel Soap Mfg. Co., Tioga, Thompson & Almond Sts., Philadelphia 34, Pa.

Circle D-2 on Reader-Service Card

Acid Dye

Cibalan Black 2GL . . . works well in union dyeing of nylon-wool combinations and is also suggested for all-wool, nylon, or silk fabrics. Solid blacks of better than 200 hrs. lightfastness and good washfastness can be produced on wool-nylon blends in 7% dyeings. The dye works well with other Cibalan colors. Ciba Co., Inc., Box 25, Village Station, New York 14, N. Y.

Circle D-3 on Reader-Service Card

Triacetate Dye Carrier

Carrier LB . . . improves absorption rate and depth of color of disperse dyes applied to triacetate fabrics. The product is marketed as a self-emulsifying oil that carries 25% of the active material. Excellent dispersions can be made with hard or soft water at 60° C. The carrier acts like a disperse dye, with considerable affinity for triacetate, and withstands high dyebath temperatures for long periods. No affect on colorfastness or fiber properties has been noted where the carrier is used as a dyeing assistant. Courtaulds Ltd., London, England.

Circle D-4 on Reader-Service Card

Vat Yellow

Tinon (R) Yellow LGR Paste . . . produces bright, clean yellow shades on cotton and rayon. The dye exhibits excellent general fastness qualities and is level dyeing. Geigy Dyestuffs Div., Geigy Chemical Corp., Saw Mill River Rd., Ardsley, N. Y.

Circle D-5 on Reader-Service Card

Polyester Film

Videne A . . . described as a completely new polyester laminating film, the product is being produced in both unoriented (Videne A) and oriented (Videne TC) forms. The polyester can be laminated to textiles and a wide variety of other materials without adhesives. It has good ageing and abrasion resistance and good dimensional stability. Goodyear Tire & Rubber Co., Akron, Ohio.

Circle D-6 on Reader-Service Card

Aftertreated Direct Dye

Cuprofix Yellow C-2GL p.a.f. . . . dyes bright yellow shades on cellulosic fibers. The dye reserves cellulose acetate and is suitable for pad dyeing. Aftertreatment with copper sulfate and acetic acid or copper-resin compounds produces dyeings of excellent lightfastness and very good wetfastness. The color is compatible with other Cuprofix C dyes and can be used in conjunction with resin finishes. Sandoz, Inc., 61-63 Van Dam St., New York 13, N. Y.

Circle D-7 on Reader-Service Card

Disperse Dye

Artisil Direct Blue Green 3G . . . offers improved brightness of shade in dyeing acetate, nylon, and other man-made fibers. The dye produces a nearly true green of excellent fastness to sunlight when dyed on acetate or nylon. Its resistance to heat makes it suitable for use on fabrics that require heat-treating. Sandoz, Inc., 61-63 Van Dam St., New York 13, N. Y.

Circle D-8 on Reader-Service Card

Premetallized Dye

Irgalan Navy Blue 2GL . . . recommended for wool in piece goods, yarn, or stock form and for silk, nylon, or polyester fabrics. The dye can be used as a self-color or for shading purposes. The shades produced have excellent lightfastness on nylon and very good lightfastness on wool. The dyeings are also fast to washing, sea water, carbonizing, hot pressing, and decatizing. Geigy Dyestuffs Div., Geigy Chemical Corp., Saw Mill River Rd., Ardsley, N. Y.

Circle D-9 on Reader-Service Card

Textile Auxiliary

Avasol 112P . . . may be used to pretreat or aftertreat man-made-fiber fabrics or the fibers themselves. The product aids dyeing and provides antistatic effects that aid in spinning and weaving. Fabrics made of man-made fibers can be pretreated with Avasol 112P to improve their dyeing characteristics with direct colors. The product forms insoluble complexes with these dyes that resist laundering and drycleaning. Alframine Corp., 72-76 Putnam St., Paterson 4, N. J.

Circle D-10 on Reader-Service Card

Naphthol Base

Naphthol AS-BN . . . a nonsubstantive naphthol that is recommended for continuous naphtholation of cotton or rayon piece goods. Brown shades of good lightfastness are produced when the base is coupled with fast-color salts or diazotized fast-color bases. Washfastness of the shades is slightly less than those based on Naphthol AS-LB or AS-DB. General Dyestuff Co., 435 Hudson St., New York 14, N. Y.

Circle D-11 on Reader-Service Card

THE NEW RESINS
for treating white cotton goods

After 25 years of experiment and failure, textile chemists came up last year with new resins that successfully treat white cotton goods, even white cotton shirts.

- ✓ What are these resins?
- ✓ What's their chemical structure?
- ✓ How do they react?
- ✓ How do you apply them?

Here are answers to these and other questions by an expert in the field.

By **HECTOR C. BORGHETTY,** Rohm & Haas Co.

ONE OF THE MOST IMPORTANT textile-chemical developments in 1957 was the introduction of resins that can be successfully used for white cotton shirts.

Developing resins for this use has presented great difficulties during the past 25 years because of the severe conditions encountered in commercial laundry practice. None of the synthetic resins developed prior to 1957 could be applied on white fabrics destined for commercial laundering because of their inherent quality of retaining chlorine and releasing it during the subsequent ironing process in the form of hydrochloric acid. Cotton is extremely sensitive to this acid, and minute traces of it result in severe yellowing and even complete destruction of the garment.

It is now possible to utilize new nitrogenous resins containing tertiary nitrogen that will withstand the severe chlorination. Simultaneously, we have been fortunate to witness the introduction of an entirely new group of textile resins that are completely non-nitrogenous and therefore ideally suited to withstand commercial chlorination. Test methods that interrelate the ability of a resin to withstand chlorination have also been studied so that it is now possible to predict the actual performance of a resin-treated fabric without subjecting it to the lengthy procedure of many repeated commercial launderings.

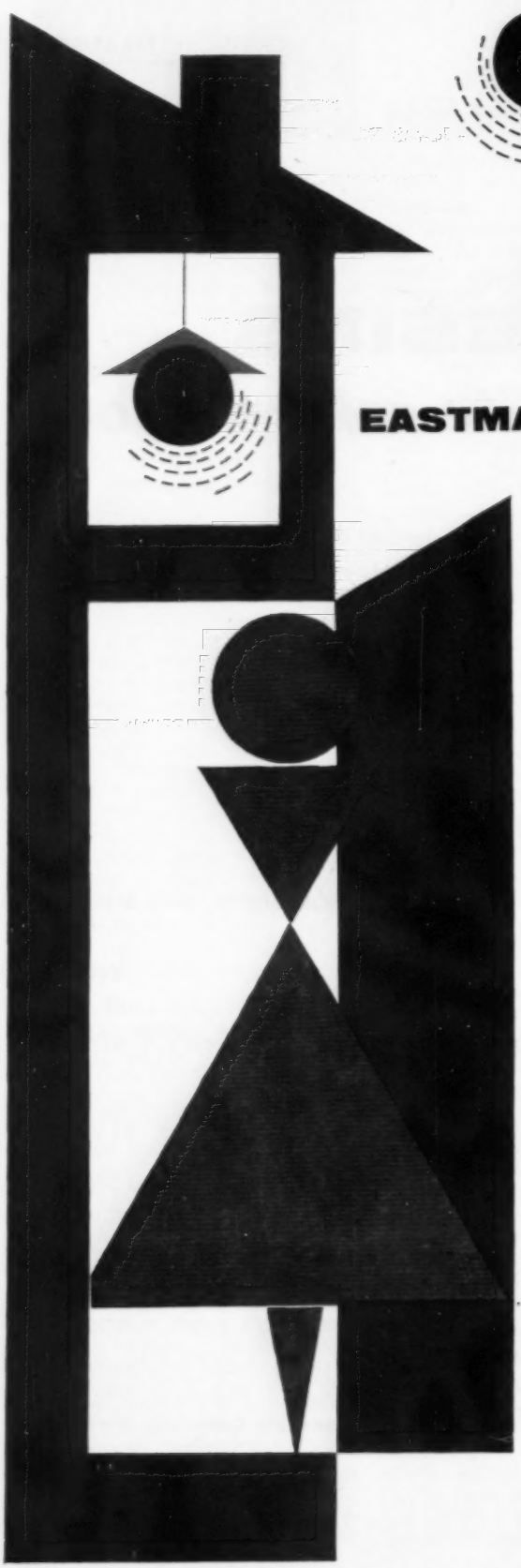
Fabric Construction

Thermosetting resins applied to cotton fabrics will lower both the tensile and tear strengths approximately 25%. This reduction is an inherent part of the crease-recovery process and must be taken into account in the selection of fabrics for a specific end use. It is often desirable to redesign the fabric construction in order to offset this loss of tensile and tear strength.

The marked improvement in anti-soiling, muss resistance, and crease recovery given by the resin makes the treatment worth while regardless of the loss of tensile and tear strength. Garments subjected to severe commercial laundering, even in the untreated form, show a greater loss in tear than in tensile strength; and major consideration should be given to this factor. Tear strength cannot be increased by adding threads; it requires a change of cotton quality, yarn number, and twist of the yarn.

Broadcloth Commonly Used

The most widely used fabric construction for white shirting is the broadcloth, woven at approximately twice the ratio of warp to filling, as 136x60. This unbalance of yarns gives



true-blue

indoors and out

EASTMAN POLYESTER BLUE 3RL

New Eastman Dye Does Not Flare Red Under Artificial Light

Seldom has a new dye had such rapid trade acceptance as Eastman's Polyester Blue 3RL. And with good reason. Polyester fabrics and their blends dyed with this truly outstanding blue dye *do not flare red under artificial light.*

Moreover, this Eastman polyester dye has better resistance to sublimation than ordinary polyester dyes offer—an important advantage in suitings. Eastman Polyester Blue 3RL has excellent processing characteristics...good build-up, good exhaustion and outstanding leveling properties.

Eastman Polyester Blue 3RL is a bright shade of reddish blue. Dyers looking for economy plus performance find Eastman Polyester Blue 3RL an excellent blue component for navies, dark browns, tans and blacks.

Polyester Blue 3RL is only one of eleven primary and shading colors comprising Eastman's new series of dyes developed specifically for use with polyester fibers.

Eastman polyester dyes exhibit excellent fastness to washing, light, dry cleaning and wet pressing. In fact, this new series of polyester dyes, evaluated in laboratory and commercial tests, provides the best over-all fastness properties of any group of polyester dyes currently available.

Dyeing of polyester fabrics is easily accomplished with carriers or dyeing assistants, although these are not required if the dyeing procedure is carried out at high temperature (250°F). Fibers can be readily dyed in tow, tops, stock, or fabric forms. Fabrics of polyester filament can be conveniently dyed in jigs. Fabrics woven of spun polyester yarns alone or blended with cotton, viscose, or wool can be easily dyed in dye-becks.

Tests show Eastman polyester dyes work well in combination with premetalized wool dyes in dyeing polyester fiber-wool blends, and with virtually all types of viscose dyes in dyeing blends containing viscose or cotton.

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Eastman Polyester Dark Red FL
Eastman Polyester Blue GR
Eastman Polyester Blue GLF
Eastman Polyester Blue 3RL
Eastman Polyester Navy G
Eastman Polyester Black RB

Eastman Polyester Dyes

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an agreeable rib effect but also attributes high strength in the warp direction and only marginal strength in the filling direction. The filling is furthermore made from yarns that are normally of low tear resistance.

When such fabrics are resin-treated, the marginal strength of the filling is reduced beyond the practical requirements for a shirt that must be subjected to repeated wear and severe launderings. If in addition the resin used exhibits chlorine absorption, the accumulative degrading effect on the tear will damage the shirt after 5 to 10 launderings.

To be satisfactory, a finished shirting fabric should have filling tensile strength of 30 lbs. and tear strength of 1¼ lbs. after 30 successive commercial launderings. A satisfactory resin should show a chlorination damage below 5% after one commercial laundering.

When a resin has the potential to degrade cotton on chlorination, there will be a continued loss as long as the resin remains in the fabric. Some resins that have been very successful on the hundreds of millions of yards of dress goods processed during the last seven years cannot be used on white shirtings. For this reason, chemical manufacturers have been extremely cautious in stressing which resin types should be used on white garments subject to severe chlorination conditions.

(The American Institute of Laundering classifies wash procedures as in Table I. The severe conditions of temperature, alkalinity, and chlorination for "white family work" are evident. The severity is greatly reduced for "light colors" and "curtains," where no chlorine or alkali is used.)

TABLE 1—LAUNDRY PROCEDURES
(American Institute of Laundering Washroom Formulas)

White Family Work (Formula 1)

Operation	Time	Temperature	Supplies
1—Suds	6 (mins.)	130° F.	Built soap and alkali
2—Suds	6	160	Built soap
3—Suds	6	160	Built soap
4—Bleach	8	150	Bleach solution (100 ppm. chlorine)
5—Rinse	2	160	Water
6—Rinse	2	160	Water
7—Rinse	2	160	Water
8—Rinse	2	130	Water
9—Blue	3	100	Bluing solution
10—Sour	3	100	Sour to pH 5.0

Light Colors (Formula 2)

1—Suds	5 (mins.)	100° F.	Low-titre soap
2—Suds	10	120	Low-titre soap
3—Suds	10	120	Low-titre soap
4—Suds	10	120	Low-titre soap
5—Rinse	3	120	Water
6—Rinse	3	120	Water
7—Rinse	3	120	Water
8—Rinse	3	110	Water
9—Sour	4	100	Sour to pH 5.0

Curtains or Wool Fabrics (Formula 3)
(Also used for woolen blankets)

1—Suds	5 (mins.)	95° F.	Low-titre soap
2—Suds	10	95	Low-titre soap
3—Rinse	3	95	Water
4—Rinse	3	95	Water
5—Sour	5	95	Sour to pH 5.0

(High water levels are used throughout this formula, and the machine is stopped during draining and refilling with water.)

types of resins

Chemical manufacturers offer three major groups of resins. These three groups do not interrelate directly with the three laundry classifications given in Table I, but there is a relationship between them that is helpful in selecting resins for specific end uses. The resin groups are subject to some overlapping, and therefore there can be some confusion where marginal requirements are desired.

The three groups are:

1. Urea- and Melamine-Formaldehyde Resins

These are the older types of resins. The urea-formaldehydes are particularly susceptible to chlorine damage and are not recommended or usually applied to cotton. They are used on rayon, which is more resistant to chlorine damage than cotton[1]. They are, furthermore, usually restricted to dyed or printed fabrics that are not apt to be washed in Formula 1, Table I (used for white goods). The melamines have an intrinsic drawback of turning yellow in mild chlorination baths.

2. Cyclic-Urea Resins

These resins have been proved of good chlorine-fastness on cotton fabrics for dress goods. Their resistance to chlorine is many times superior to that of standard urea-formaldehyde resins. A comparison between the two resins is shown in Fig. A, which explains the tremendous success of the cyclic resins in recent years.

Many hundreds of millions of yards of cotton dress goods have been processed with the major cyclic resins, dimethylol ethylene urea (D.M.E.U.), with an insignificant number of complaints. The household wash tests shown in Fig. A were conducted according to instructions on the Clorox

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TABLE 2—EFFECT OF CLOROX WASHING

Sample	Treated ten. str.* (lbs.)	1 Wash ten. str. (lbs.)	5 Washes ten. str. (lbs.)	10 Washes ten. str. (lbs.)	Total % loss on 10 washes	Same 10 washes followed by scorching 30 secs. at 365° F. % Loss
H_2O Control	43.7	48	44.7	40.7	0	0
10% D.M.E.U.	31.3	30	29	31	0	19
6% Methoxy U.F.	32.3	29	29.3	16.7	51	37
20% Monomeric U.F.	33	36	36	8	75	82
7% Epoxy, 3% D.M.E.U.	30	30	30	31	0	0

All fabrics 80x80 white cotton dried at 300° F. after each wash
*Tensile strength

bottle. The tests were performed on 80x80 cotton fabric, padded with resin and catalyst, dried, cured, and then washed with an untreated fabric in a Laundromat at 140° F. for 15 mins. with 0.15% Tide (a built alkaline detergent) and 0.02% available chlorine.

This chlorine concentration corresponds to ½ oz. of Clorox per gallon as indicated on the Clorox bottle. It is twice the amount used by commercial laundries and twice the amount given in AATCC Standard Test Method 36-1957.

Table 2 shows the effect of household Clorox washes on the tensile strength of cotton fabric treated with various resins.

3. Nonchlorine-Retentive Resins

Only the non-nitrogenous resins can be considered completely free of chlorine damage. The two types available today are the epoxy reactants and the polyglycol acetals. Both were just recently introduced and are still being extensively field-tested. Both definitely meet the nondamaging requirements, but it must be understood that these resins will affect the initial strength of the fabric in order to impart the crease-resistant character. This condition, however, is common to all resins, as stated at the beginning of this article.

The epoxy types have low crease recovery, but recovery can be brought to a satisfactory level by formulation (discussed later under "Mixtures of Resins").

Overlapping of Resin Types

The necessity of obtaining improved chlorine-fastness has prompted most resin manufacturers and finishing plants to upgrade the two lower groups of resins in some manner that will permit them to meet requirements. This work has been carried out mostly by using AATCC Tentative

Fig. A

Loss in Tensile Strength After 10 Consecutive Household Clorox Washings (Fabric dried at 300° F. after each wash)

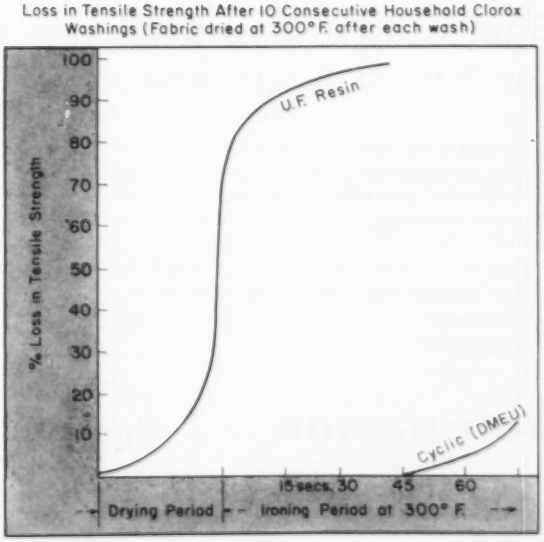
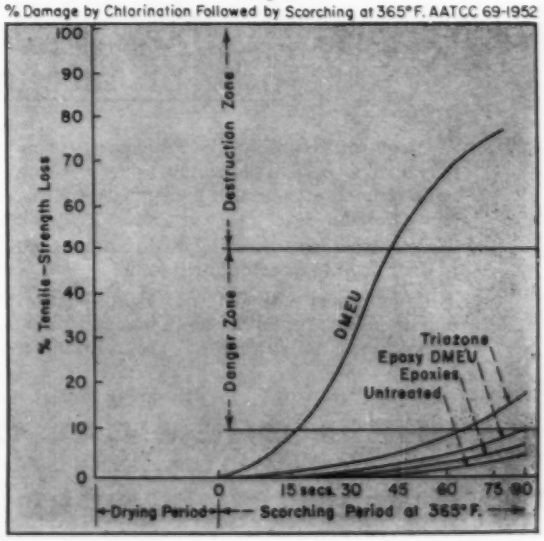
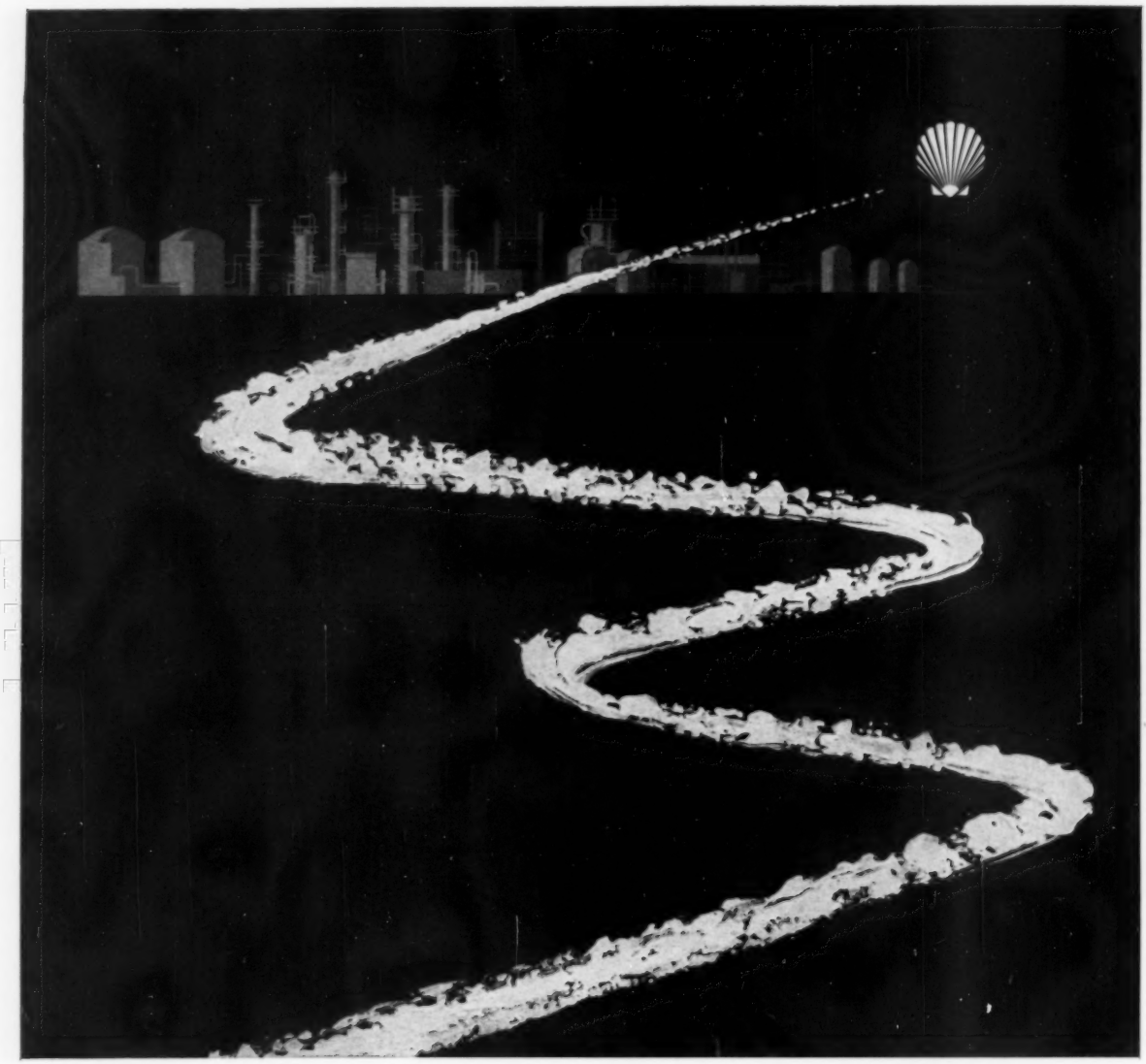


Fig. B

% Damage by Chlorination Followed by Scorching at 365° F. AATCC 69-1952





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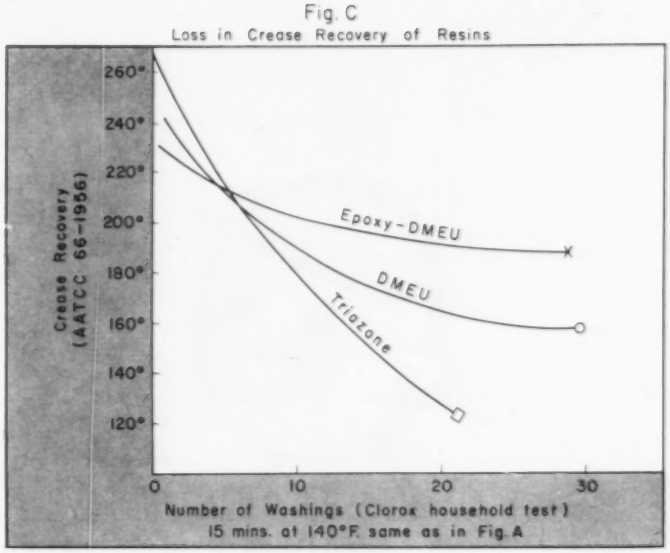
Test Method 69-1952 as a criterion.

Upgrading is usually easy to achieve by this test, which is carried out, however, in a manner that is not realistic for the severe washing conditions of a cotton fabric. The term "wash-wear" carries the implication of durability to washing, while the AATCC does not incorporate any standard of washing resistance. It is therefore inconceivable that a resin that merely meets this test should necessarily qualify for a wash-wear finish.

Fig. C



Upgrading Resins

The current means of upgrading resins to meet the test are:

1. Introduction of metallic-salt catalysts such as magnesium chloride and zinc nitrate
2. Introduction of the methoxy group, which would tend to interfere with the reactivity of the chlorine on the resin molecule
3. Introduction of epoxy reactant into the cyclic-urea resins to reduce the amount of total nitrogen and also to block subsequent reactivity with chlorine
4. Introduction of tertiary nitrogen, which functions as a base and therefore is able to neutralize the hydrochloric acid evolved during the scorching procedure and thus to reduce the tensile loss

Tertiary nitrogen is characterized by absence of —H attached to the nitrogen. The substitution is made with alkyl groups. Tertiary nitrogen does not, however, give resins that are reactive to cellulose, and it is necessary to introduce an additional reactive group into the same molecule. The final product has a balance between chlorine-absorptive nitrogen and the tertiary nitrogen to give a resin that will react well and yet not damage the fiber in the presence of chlorine. This balance is shown in Structure 2 (in the section "Chemical Constitution").

How To Evaluate Upgrading

In order to fully evaluate the effect of the upgrading of the resin, it is

TABLE 3—DAMAGE CAUSED BY CHLORINE (%)

Treatment	AATCC tests* before wash	AATCC tests* after 1 Sanf. wash	AATCC tests* after 5 Sanf. washes	Clorox wash 15 mins. each at 160°F. 0.02% chlorine 0.15% Tide		Commercial laundry 136x60 Broadcloth shirts	
				After 10	After 30	After 5	After 20
Untreated	0	0	0	0	0	0	0
Monomeric U. F. Resin	80	70	50	80	90	100	..
Methoxy U. F. Resin Zinc nitrate cat.	50	70	80	50	90	100	..
Dimethylol E.U. Resin Reg. catalyst	30	50	80	0	0	80	..
D.M.E.U. Zinc nitrate cat.	0	50	80	0	0	50	80
Triazone	0	20	10	20	20	0	0
Acetal	0	0	0	..	..	..	..
D.M.E.U./Epoxy	0	0	0	0	10	0	10
Epoxy	0	0	0	0	0	0	0

*69—1952

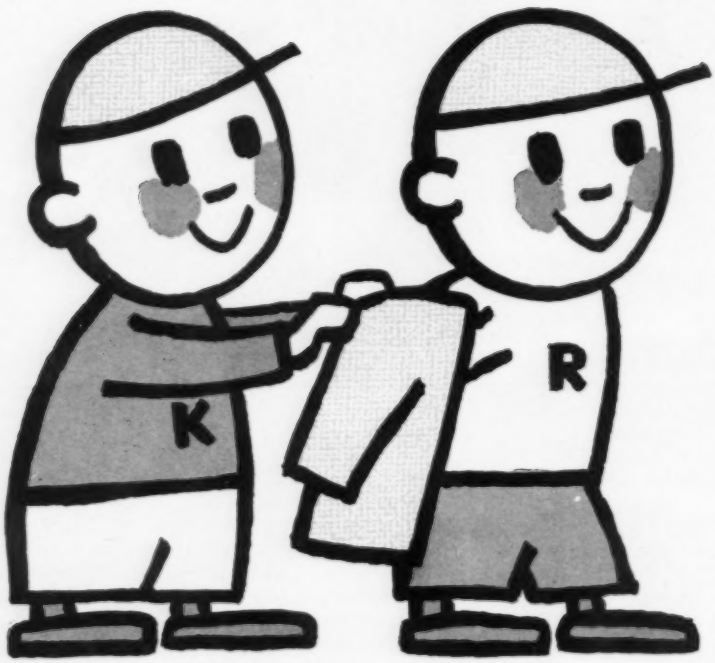


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TABLE 4—*CREASE RECOVERY (TOTAL WARP AND FILLING)

	Initially	1 com. ldrg.**	5 com. ldrg.**	20 com. ldrg.**
Broadcloth fabric... 136x60 (treated)	260°	230°	200°	160°
Broadcloth fabric... 136x60 (untreated)	140°	140°	140°	140°

*Evaluated by AATCC 66—1956
**Commercial launderings

necessary to first subject the fabric to a very severe wash that would remove any transistory upgrading effect. A full Sanforized cotton wash given at the boil will remove any transient protection given to a resin; then it is satisfactory to subject the fabric to AATCC 69-1952.

Testing in this manner will readily show that of the four mechanisms listed for upgrading only the last two are valid; in fact, the methoxy groups lose their blocking effect.

Metallic-salt catalysts, which rely upon a buffering effect imparted by conversion during curing and afterwashing of the magnesium chloride or zinc nitrate, lose their protection. The metal salts are converted to the oxide or the hydroxide forms and are removed by a full Sanforized wash.

A secondary and entirely different effect can be imparted by magnesium chloride to melamine resins to eliminate any yellowing caused by chlorine. This effect can be hypothetically attributed to the occupation by the magnesium ion of a spatial configuration with the melamine to block or hinder the entrance of the chloride ion.

This structure resembles chelation, and the yellow color can be attributed to a chromophor effect that is characteristic of a dyestuff. The elimination of this yellowing of melamine resins is only temporary, and it can be annulled when chlorination is carried out at high temperatures encountered either in household or commercial laundering.*

Once the magnesium ion is removed, the spatial configuration collapses and the chlorine enters the structure. Some melamine resins have many outstanding properties; and if the yellowing could be overcome, they would be of much greater value in the finishing of cotton fabrics. They are known to show little tensile damage to chlorination because of the presence in the molecule of tertiary nitrogen as given in Structure 3 (in "Chemical Constitution").

Two Tests of Upgrading

Any protection or upgrading effect of the various mechanisms should first be proved realistic by subjecting the fabric to the AATCC 69-1952, preceded by a Sanforized wash test. Testing is best accomplished by running one and five Sanforized washings in order to determine the protective effect and also the durability of the resin.

Some resins show apparent chlorine resistance after five Sanforized washings because the nitrogen has all been removed. In order not to be misled it is advisable to run two independent series of one and five Sanforized washings, both followed by AATCC 69-1952. The damage should show below 10% in either test.

The durability of crease recovery can also be evaluated after one and five Sanforized washings by measuring the angle of crease recovery. The curves in Fig. B illustrate the chlorine damage on several treatments that have been subjected to five Sanforized washings.

An alternate test that eliminates the necessity of the Sanforized wash, as well as the AATCC 69-1952, is a series of 20 commercial launderings carried out on shirts.

Another alternate test is a series of 10 Clorox wash tests as given for the curve in Fig. A.

Severity of Commercial Laundering

Because the tendering action of chlorine on a resin is a function of the presence and type of nitrogen in the resin, it follows that various resins will have different degrees of chlorine resistance, as evidenced in Table 3. This table shows the relationship between various resins, including the latest developments. It is evident that only the epoxy is completely foolproof, but the triazone is satisfactory to commercial laundering.

Although it appears that only the non-nitrogenous resins pass all chlorine-damage tests without loss, other considerations must be taken into account before a decision to use them is made.

The epoxy types lack outstanding crease recovery in the dry state, although they possess excellent crease recovery in the wet stage and therefore show good wash-wear characteristics. Because of their poor dry crease recovery, they lack the high muss resistance of nitrogenous resins; and for this reason, it has become necessary to increase the wrinkle recovery of the epoxy resins by using them in combination with cyclic ureas.

A second source of satisfactory resins under commercial-laundry conditions is the triazones, which can be used alone. While the triazone resins show no fiber damage, they lack durability of wrinkle recovery and wash-wear effect after repeated commercial launderings or household chlorinations.

This lack has created the dilemma that a good drip-dry shirt will lose its drip-dry character after it has been given repeated household chlorinations or several commercial launderings. It is certainly advisable, therefore, that the purchaser of a wash-wear shirt endeavor to confine it to mild washings.

Resin Damage Varies

It can be fairly stated that many resins will not damage during commercial laundering. Although they may lose their drip-dry character, they will preserve the ease of ironing quality and good soil and muss resistance even after repeated launderings. Shirt manufacturers are endeavoring to develop

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resins that possess greater durability to commercial laundering.

Commercial laundries employ not only chlorine, as in Formula 1 of Table I, but also use prolonged periods of time at high temperature in the presence of the alkali with abundant mechanical action and a final acid sour. These factors all combine to break the resin down chemically and remove it from the cellulose. The severity of commercial laundering can be readily evaluated by the loss in crease recovery, as shown in Table 4 for a triazone-resin-treated shirt.

Fig. C shows the loss in crease recovery of three resin types during a household Clorox wash.

With considerable latitude, and much generalization, it is possible to establish a workable relationship between the various washing techniques in the following manner:

1 commercial laundering is equivalent to
2 Sanforized washes, or
5 household Clorox washes, or
10 household machine washes, or
20 drip-dry washings

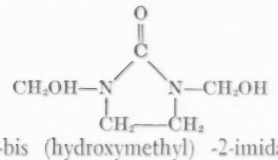
chemical constitution of the resins

Cyclic Ureas

These resins represent the major factor for the success of resin-treated cotton dress goods over a period of five years. The hundreds of millions of yards of trouble-free crease-resistant finishes are testimony to the durability and chlorine resistance required for dress goods. It is estimated that 1¼-billion yds. of cotton cloth are treated yearly with dimethylol ethylene urea, which is the most important member of this group. Prior to its introduction, the available resins were mainly urea and melamine formaldehydes.

There are now two groups of cyclic-urea resins, the imidazolidones and the triazones, represented by Chemical Structure 1 and 2 respectively:

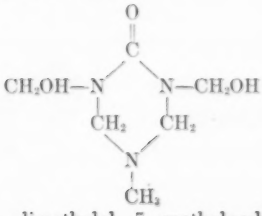
Structure No. 1



1,3-bis (hydroxymethyl) -2-imidazolidone

Commonly known as dimethylol ethylene urea (D.M.E.U.)

Structure No. 2

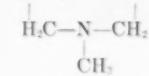


1,3 - dimethylol -5- methylperhydrotriazone

Commonly known as triazone

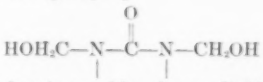
How the Two Types Compare

The two differ in the additional member of the ring structure of the triazone. This is the important basic tertiary amine group

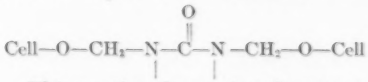


that can greatly reduce or even annul the effect of chlorine damage resulting from the evolution of hydrochloric acid during ironing of the fabric. The triazones are of very recent use but have been extensively field-tested on white shirts.

Both types of cyclic urea resins have in common the reactive dimethylol-urea grouping

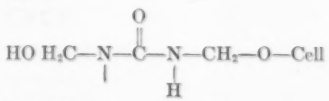


that is capable of cross-linking to cotton to impart crease resistance:

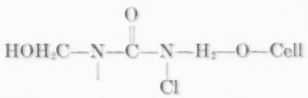


This reaction also renders the cotton less swellable in water and thus more apt to dry easily and quickly without creases.

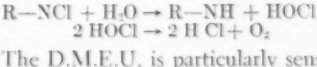
This reactive group under severe hydrolysis is forced open and the ring is broken to allow an active —H to enter:



which H, in turn, is able to exchange with chlorine to form a chloramide:



Chloramides react readily under high ironing temperatures in the presence of moisture to form hydrochloric acid, which is liberated instantaneously on the adjacent cotton fiber:



The D.M.E.U. is particularly sensitive to this transformation, which is inhibited in the triazone either because of the presence of the tertiary amine group or because this group can function as a base able to neutralize the dangerous acid formed and then gradually release it in minute quantities without damage. Any HCl not released by the tertiary amine would be neutralized during successive laundering so that the buffering mechanism is reacquired. A parallel non-tendering mechanism occurs in the acid-curing of nitrogenous resins without degradation of the cellulose.

Drawbacks of the Resins

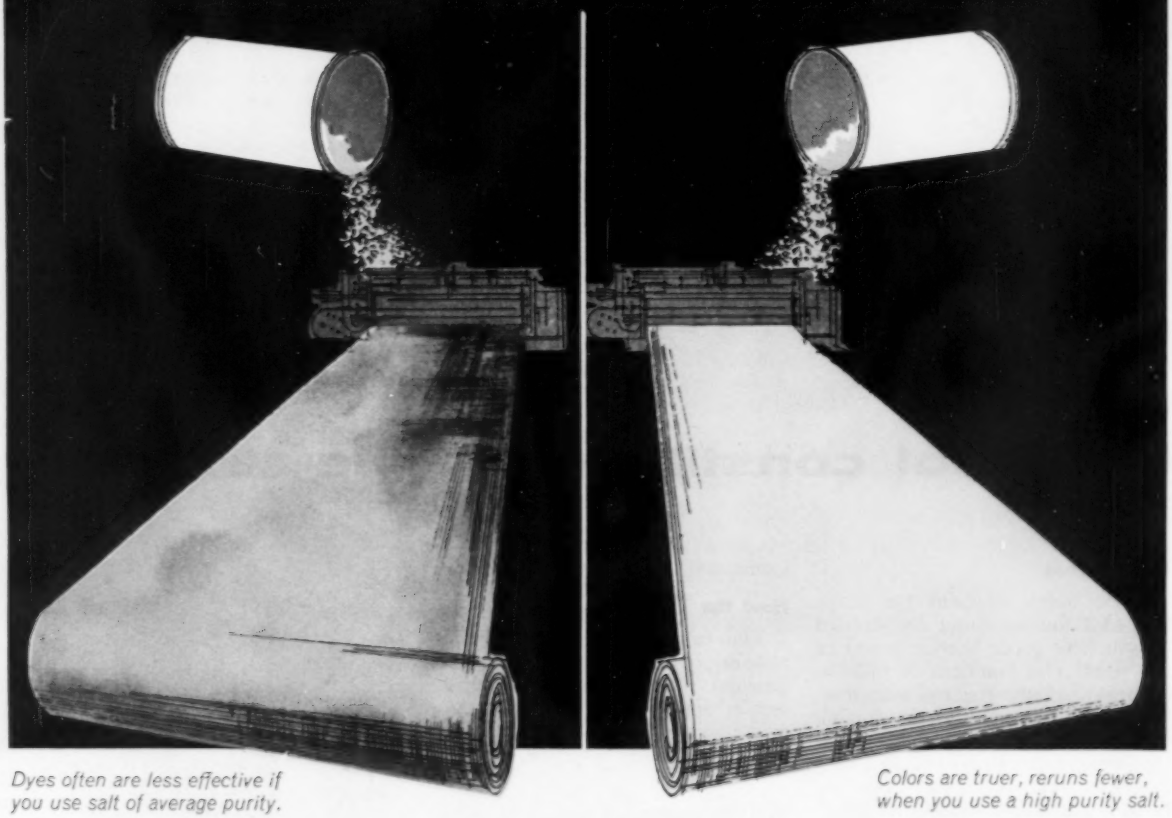
Yellowing

Besides chlorine damage, other important factors contribute to the difficulty of selecting resins. Yellowing can occur for several reasons:

1. Yellow color imparted when HCl damage begins

2. Yellowing caused by the addition of melamine-formaldehyde resins to D.M.E.U. in an attempt to obtain the buffering effect of tertiary nitrogen groups present in the methylolated derivatives of dialkyl melamine:

Let your dyes do the job the manufacturer intended!



Dyes often are less effective if you use salt of average purity.

Colors are truer, reruns fewer, when you use a high purity salt.

Use Morton Chemical Grade 999 Salt

Morton Chemical Grade 999 is the all sodium salt (sodium chloride and a trace of sodium sulphate) that many dye manufacturers use in testing their dyes. When you use Morton Chemical Grade 999 Salt in your operation, it complements your dyes . . . makes them more effective, and helps you get softer finishes, more even shades, and greater color intensity.

And no wonder! Morton Chemical Grade 999 is more than 99.9% pure sodium chloride. It is a low cost, high purity evaporated salt free from objectionable calcium and magnesium compounds that may precipitate or react with dyes to reduce their effectiveness.

Available in 100-lb. bags or bulk, Chemical Grade 999 is recommended for use **whenever commercial calcium-free salt is required.** It's specifically recommended when direct salting is used in dyeing rawstock, package, beam, beck or jig with either sulphur, direct, or naphthol dyes.

☐ *Please send me more information about Morton Chemical Grade 999 Salt.*

☐ *I would also like to know how much I can reduce calcium and magnesium content by using Morton Chemical Grade 999 Salt. Please have a Morton Brine Engineer arrange a mutually convenient time to discuss the benefits of using Chemical Grade 999 Salt.*

Name_____
(Please print)

Title_____

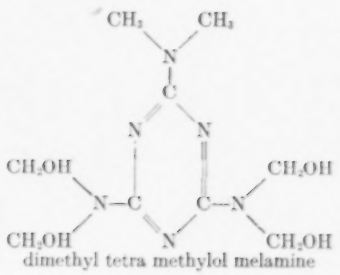
Company_____

Street_____

City_____ Zone____ State_____

MORTON SALT COMPANY
INDUSTRIAL DIVISION
Dept. TW4-58 120 So. LaSalle Street, Chicago 3, Illinois

Structure No. 3



dimethyl tetra methylol melamine

3. Yellowing attributable to discoloration of amine groupings present as impurities, particularly in the triazone resins. This yellowing becomes evident on scorching after chlorination of the triazone and is not necessarily accompanied by tendering. It can be very objectionable for white fabrics subjected to high ironing temperature after chlorination.

Odor

Odor of methylamines or formaldehyde is another source of potential claims on fabrics and often does not occur until conducive conditions are encountered. Odor can develop during curing or storage of the fabrics, sometimes after months or years.

Methylamines are the cause of the bad fish-like odor of resin-treated fabrics. The odor can be easily eliminated by a thorough afterwash. An alkaline wash will free the amine, which is volatile and therefore easily removed from the fabric during the subsequent drying.

If the acid catalyst has not been thoroughly neutralized, the amine is retained and will later develop while the garment is being stored or worn. Alkaline perspiration will release the amine and cause an offensive odor. Therefore the only true safeguard for the elimination of the danger of odor development is a thorough alkaline afterwash, followed by drying on a frame or cans. Any attempt to bypass the alkaline afterwash and to rely upon the binding qualities of the acid will result in the liberation of the amine at some stage where it can cause serious complaints after the fabrics have been made into garments.

Complaints often occur many months after processing of the fabric, and for some unknown reason fabrics susceptible to odor can remain dormant without showing any difficulty until hot, humid conditions are encountered; then they unexpectedly release the fish-like odor. Dampening of the fabrics, which is often necessary in order to facilitate the cutting of the garments, can create the appropriate environment for odor.

Chemistry of Odor Formation

The chemistry of odor development can be outlined as follows:

Methylamines are formed directly by reacting ammonia or its salts with formaldehyde. They are present, or can be formed, wherever urea-formaldehyde resins are used. The catalysis of the reaction to form the methylamines is not fully understood; but wherever conducive conditions exist, one or all three of the fish-like amines is evolved:

$$NH_3 + n\,CH_2O = CH_3NH_2$$
$$\text{or } (CH_3)_2NH + CO_2 + H_2O$$
$$\text{or } (CH_3)_3N$$

The mono, di, and tri methylamines are locked by the acid catalyst into their salts, and no odor will be noticed until the environment becomes damp or slightly alkaline.

Triazone resins, made directly from alkyl amines, are much more apt to contain unreacted amines than dimethylol-ethylene-urea resins.

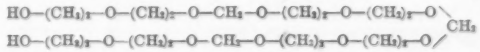
the new resins

Non-Nitrogenous Resins

These resins point the way to future improvements in resin chemistry. Although less reactive than nitrogenous resins, they can be catalyzed with strong catalysts in order to crosslink cellulose and give crease-resistant qualities.

The simplest member of the non-nitrogenous group is formaldehyde; but the difficulty of controlling its catalysis, together with the volatility of formaldehyde, results in low efficiency or high acid damage. Formaldehyde has not been successfully controlled for the treatment of cotton fabrics.

Formaldehyde-bearing compounds such as the polyglycol acetals described in U. S. Patent 2,786,081 of Quaker Chemical Products Corp.

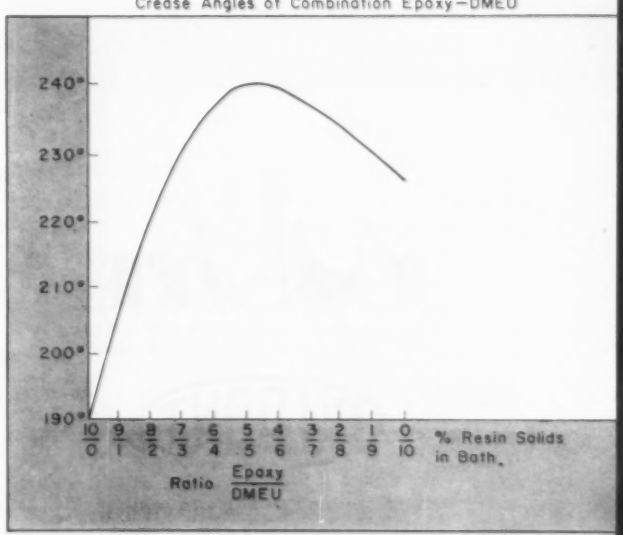


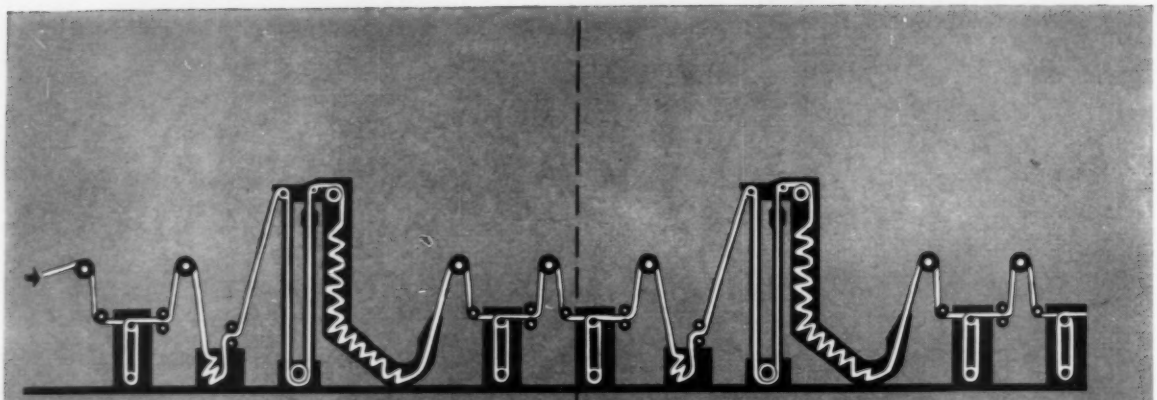
are already on the market and are being studied with interest.

The efficiency of the formaldehyde carrier is a function of molecular weight and a compromise between volatility of the final compound and its molecular weight. It is therefore foreseeable that with the introduction of the polyglycol acetals further improvements will be made.

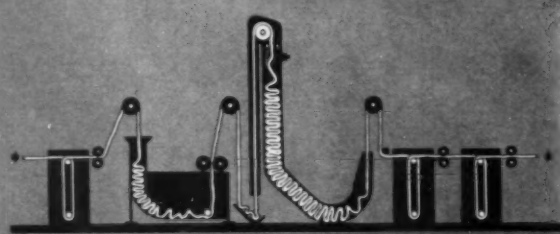
Fig. D

Crease Angles of Combination Epoxy—DMEU





Conventional continuous peroxide bleaching process



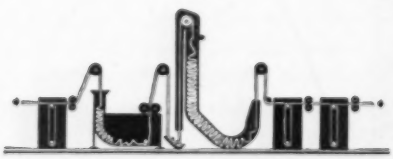
SAVE THIS FLOOR SPACE
OR
DOUBLE YOUR PRODUCTION

DU PONT SOLO-MATIC PROCESS

gives you more bleaching capacity per unit of floor area

• Only a minimum of equipment is needed for the Du Pont Solo-Matic hydrogen peroxide bleaching process. It's so compact and efficient it can give you the same production in half your plant space, or double your production in the same space!

A typical single-stage Solo-Matic system employing one J-Box occupies a space 45 feet by 20 feet and bleaches up to 6,000 pounds of fabric per hour. This is about half the space required for the same output by conventional two-stage units. Two Solo-Matic units easily fit into the same space as one conventional unit to double your production. Let us give you the full story of the Solo-Matic hydrogen peroxide bleaching process. For more information, just drop a line to Du Pont at the address below.



DU PONT'S SOLO-MATIC PROCESS—the most advanced single-stage bleaching method available.

DU PONT ALBONE®
hydrogen peroxide

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BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

ELECTROCHEMICALS DEPARTMENT
Peroxygen Products Division

E. I. DU PONT DE NEMOURS & CO. (INC.)
Wilmington 98, Delaware

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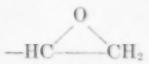
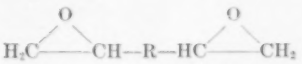
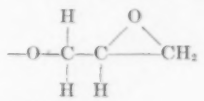
Epoxy Resins

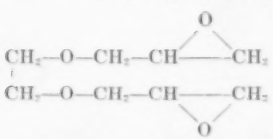
These resins represent an entirely new group of cellulose reactants and were first brought to the attention of the textile industry by Shell Development Co. in U. S. Patent 2,752,269.

The reactive portion of the resin is the epoxy group or oxirane ring  .

In order to obtain a resin that is able to crosslink cellulose, it is necessary to have at least two of these epoxy groups to give a diepoxide:



A typical polyepoxide[3] is the diglycidyl ether of ethylene glycol in which the glycidyl  is used instead of the simple epoxy group:



The efficiency of the resin treatment is a function of the molecular weight of the polyepoxide reactant; but if the molecular weight is too low, volatility and skin irritation may result.

The present epoxy resins for cotton are satisfactory except for low yield at high price. The reactivity of the epoxy groups to cellulose can be obtained with strong acid catalysts such as zinc fluoborate. New resins will probably be synthesized of higher reactivity and efficiency.

The durability of the epoxy resins to washing is extremely good, and the wash-wear qualities are excellent. They do not impart a good, springy crease-resistant feel even at high angles of crease recovery; therefore they are used in combination with other resins.

Mixtures of Resins

Epoxy- and D.M.E.U.-resin mixtures impart excellent crease recovery, high durability, and excellent chlorine resistance under the most severe conditions. The blending requires balance between the epoxy and the nitrogenous resin.[4]

Figs. D and E show the various degrees of crease recovery and chlorine protection obtainable with such combinations. The chlorination test (AATCC 69-1952) given in Fig. E was made after five Sanforized washes.

The protective action imparted to the nitrogenous resin by the epoxide may be one of direct chemical combination to the imino group, which thus is able to act as an impediment to the entrance of chlorine into the ring. At the proper ratio of the two resins no chlorine damage occurs, no yellowing is present, and no amine odors will develop.

The epoxy resins are very reactive in water solution and therefore should be handled in 100% form free of water. The chemicals should be emulsified immediately prior to use; otherwise, the epoxy groups will be transformed to glycol and lose all reactivity.

Fig. E

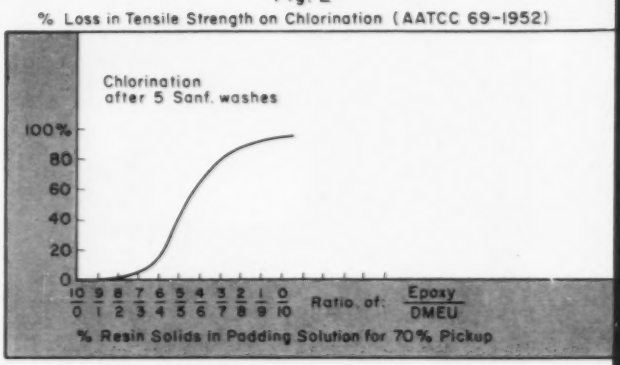
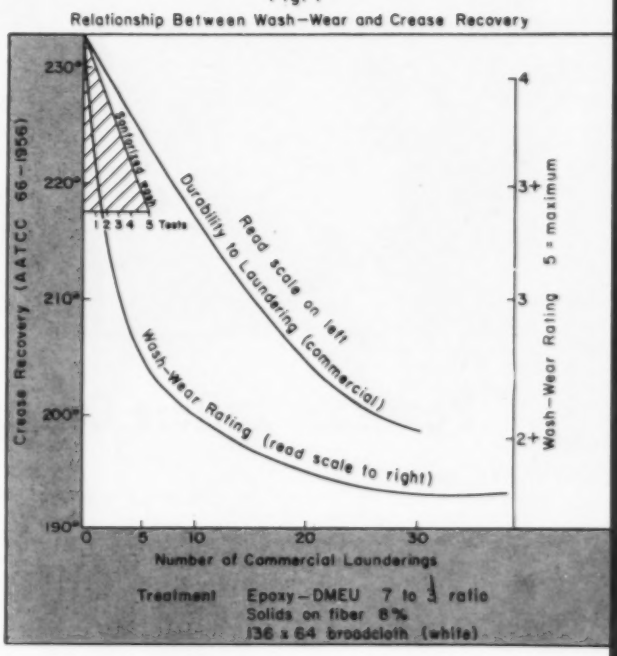

% Loss in Tensile Strength on Chlorination (AATCC 69-1952)
Chlorination after 5 Sanf. washes
100%
80
60
40
20
0
10 9 8 7 6 5 4 3 2 1 0
0 1 2 3 4 5 6 7 8 9 10
Ratio of: Epoxy / DMEU
% Resin Solids in Padding Solution for 70% Pickup

Fig. F

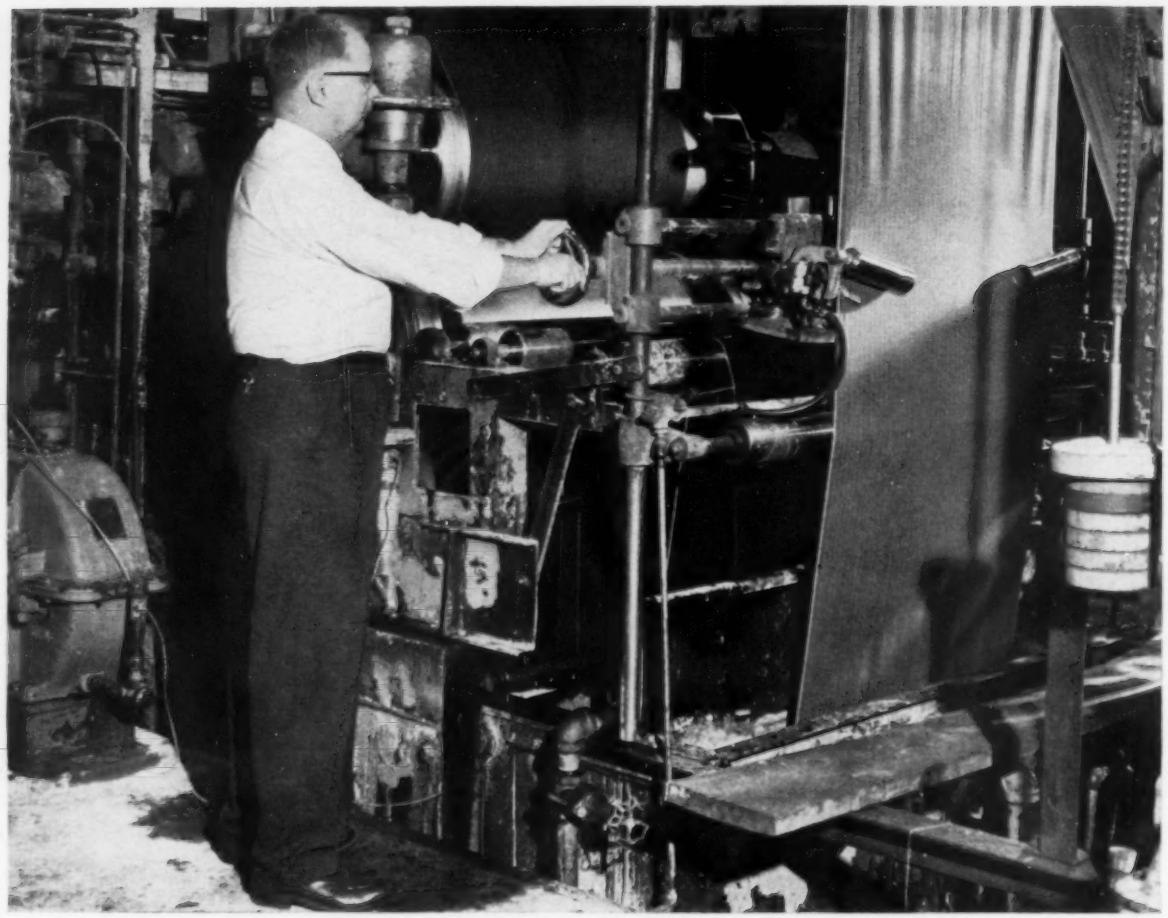


Application Formula

A typical application formula for a wash-wear finish for white cotton fabric, with 70% pickup, on perfectly prepared and neutralized cloth is:

	Solution concentration	Ingredient
	2.0%	Epoxy emulsifier Pour into ½ total water at 100° F.
Add	8.0%	Epoxy resin Stirring well and slowly
Add	7.0%	Dimethylol ethylene urea (50%) Bring to volume
Add	1.25%	Zinc fluoborate First diluted 1:3 in water

CONTINUED ON PAGE 107



Pennsalt Tailors Caustic to Textile Needs

To get top efficiency in kier boiling, scouring, bleaching, mercerizing, cellulose steeping . . . and all other textile processes that demand quality caustic . . . you need a *form* of caustic tailored to each job. That's why Pennsalt supplies controlled-purity caustic in a choice of flake, solid, 50% and 73% regular grade liquor and 50% and 73% rayon grade.

You'll get tailored delivery, too. Pennsalt specializes in delivering by the method that's most economical for you. To provide freight savings and dependable on-schedule deliveries to mills in all locations, we can ship to you by barge, tank car and/or tank truck from our plants and bulk terminals.

From our plant at Calvert City, Kentucky, we supply southern mills with high purity mercury-cell caustic soda. To assure prompt, convenient delivery to other areas, we've established new caustic bulk shipping centers at Chicago and Pittsburgh . . . affording you local supply points for caustic from both our new Calvert City plant and our original plant at Wyandotte, Mich.

Pennsalt also specializes in other quality chemicals for specific textile needs. Among these are chlorine, hydrogen peroxide, potassium and ammonium persulfate, ammonia, and ammonium chloride. And you get expert assistance to help you buy, store, handle and apply them with efficiency and safety.

Why not get the facts on tailored chemical service . . . call or write Pennsalt today.

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Representatives: Airco Company International, New York
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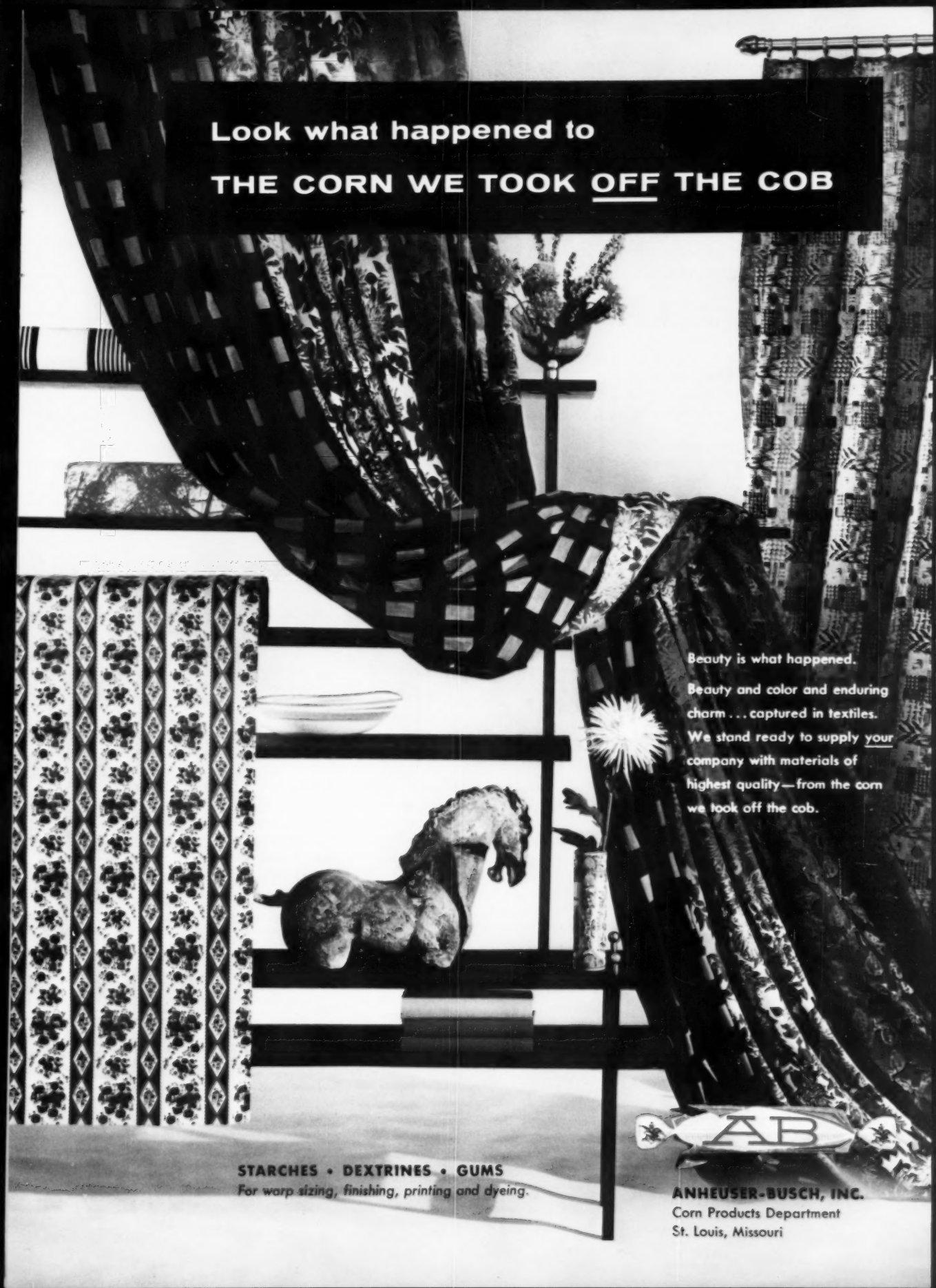
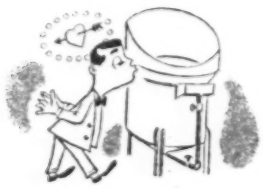
Pennsalt Chemicals
ESTABLISHED 1850

In the West, Pennsalt inorganic chemicals are available through Pennsalt of Washington Division, with plants at Tacoma, Washington and Portland, Oregon.


Look what happened to
THE CORN WE TOOK OFF THE COB
Beauty is what happened.
Beauty and color and enduring charm . . . captured in textiles. We stand ready to supply your company with materials of highest quality—from the corn we took off the cob.
AB
STARCHES • DEXTRINES • GUMS
For warp sizing, finishing, printing and dyeing.
ANHEUSER-BUSCH, INC.
Corn Products Department
St. Louis, Missouri

Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.



"Lixator" Improvements Make Brine Production More Efficient

Widely used throughout industry, Lixators are automatic rock-salt dissolvers developed exclusively by International Salt Company. They produce high-quality, fully saturated, self-filtered brine . . . and virtually eliminate the work and expense of storing, handling and using dry salt.

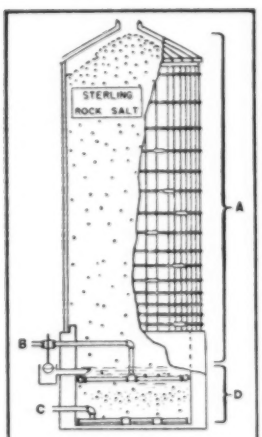
Excellent as this brine-making equipment is, International is constantly working to *improve* Lixator designs. From time to time, we also introduce special new Lixator attachments. Here are some improvements and attachments that can make production of Lixate brine more efficient and economical in your plant.

Low liquid level—a basic design feature that provides great savings by eliminating the need for deep salt-dissolving tanks. For example, it is possible to convert an old silo, dry-salt storage bin or unused room into a first-rate Storage or Silo Lixator simply by making the lowest portion into a waterproof salt-dissolving and brine-storage tank. The upper portion need *not* be waterproofed or made brine-tight.

A common method of waterproofing is to line the floor and bottom portion of the walls with concrete. Lixate brine is made in this lower tank portion, with dry salt occupying the space above the liquid level.

Electrode controls. To regulate the liquid level in a Lixator, electrode controls are often used. This is an excellent alternative to the standard float controls in many Lixator installations.

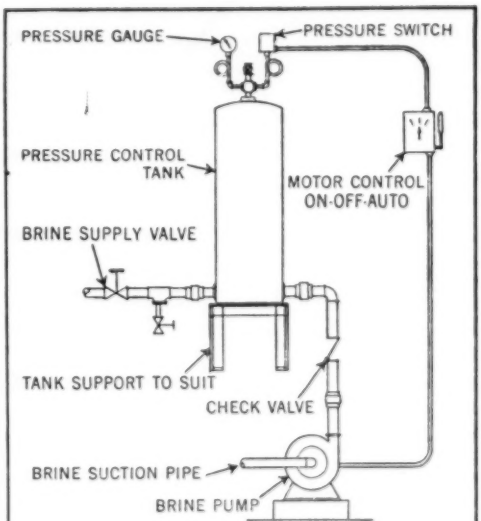
Two electrodes of different length are protected in a length of pipe, then immersed in the Lixator. Whenever the liquid level falls below the lower electrode, the electric circuit is broken, a relay opens to close a load contact, and the water valve is opened. When the liquid level rises to the higher electrode, the circuit is closed, and the relay closes to shut the valve. In this way the brine level is maintained between the desired limits in the Lixator—continuously and automatically.



A. SALT STORAGE ZONE
B. WATER INLET
C. BRINE OUTLET
D. SALT DISSOLUTION AND FILTRATION ZONE

LOW LIQUID LEVEL

In this Silo Lixator, only the bottom portion is brine-tight



AUTOMATIC PRESSURE CONTROLS FOR LIXATE BRINE PUMPING SYSTEM

Pressure controls . . . for brine systems. International has introduced the technique of automatically starting and stopping Lixate brine pumps by pressure switches. If a valve is opened anywhere in the brine distribution piping, brine flows and brine line pressure drops slightly. This, in turn, activates a switch, starting the pump, which withdraws brine from the Lixator. Everything is automatic. The operator only opens and closes a brine valve at the point of use.

Introduction of brine-metering devices. In cooperation with leading meter manufacturers, International has pioneered in the application of highly accurate and specialized meters for brine. Among the advantages of using these meters with Lixators is precise *salt* measurement, since every gallon of Lixate brine contains exactly 2.65 lbs. of salt. Also, automatic shut-off metering devices allow you to preset the amount of brine you want. Flow will stop when this amount has been measured out.

In many other ways, brine meters and other Lixator attachments can boost brine-making and brine-using efficiency. To find out how you can benefit from such devices, contact International. One of our experienced sales engineers will gladly explain about brine-density and brine-flow regulators, piping layouts, continuous brine-dilution devices, etc. He can also recommend the type and size of Sterling Salt best suited to your needs.

INTERNATIONAL SALT CO., SCRANTON, PA.

Sales Offices: Atlanta, Ga.; Chicago, Ill.; New Orleans, La.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Newark, N. J.; Buffalo, N. Y.; New York, N. Y.; Cincinnati, O.; Cleveland, O.; Philadelphia, Pa.; Pittsburgh, Pa.; Memphis, Tenn.; and Richmond, Va.

Service and research are the extras in **STERLING SALT**

PRODUCT OF INTERNATIONAL SALT COMPANY, INC.

Pad at 70% pickup.
Dry on frame at ½-in. above finished width.
Cure 1¼ mins. at 360° F.
Afterwash with 1% perborate and detergent in open form.
Cloth should then be dried, framed, and compressive-shrunk.

This formula, applied to 136x64 broadcloth, was tested after laundering and Sanforized washing and gave no damage whatever even after 30 severe commercial launderings carried out under the most drastic conditions. The loss of wash-wear character took place after five commercial launderings, but the ease of care and dry ironing was still good after 20 commercial launderings.

Fig. F shows the gradual effect of laundering on crease recovery and wash-wear rating. These two properties no longer show the relationship expected and usually obtained when the garments are given repeated mild washings.

Trademarks

Clorox—Procter & Gamble Co.
Laundromat—Westinghouse Electric Corp.
Tide—Procter & Gamble Co.
Sanforized—Cluett, Peabody & Co., Inc.

References

(1) Nuessle, Fineman and Heiges "Some Controversial Aspects of Crease Resistance of Cellulosic Fabrics," *Textile Research Journal* Vol. XXV, No. 1, Jan., 1955

(2) H. C. Borghetty and D. Fornelli "Cotton Crushproofing—Theory, Chemistry, Application," TEXTILE WORLD, Dec., 1955

(3) C. W. Schroeder and F. E. Condo "Epoxy Resins in the Crease-proofing of Cotton," *Textile Research Journal* Vol. XXVII, No. 2, Feb., 1957

(4) Gagliardi Research Corp.

The Laurel Leaf

BUSINESS MAGAZINE EDITION

IT BEATS ALL! . . .
LAURAMINE 314-A

For really superior aftertreating of cotton (especially knitting) yarns, LAURAMINE 314-A is a top-quality anionic finishing agent. Quality member of the LAUREL line, it is wonderfully resistant to the adverse effect of ageing and . . . *will not* turn rancid. Cannot alter even the most delicate shades of dyed goods, and whites *stay* white.

A white, medium viscosity paste, LAURAMINE 314-A is recommended for use as a self-finish. But, while best results are obtained with it alone, it is also compatible with other finishing materials—except for cationics, of course—and may be safely used in combination.

The stability of LAURAMINE 314-A is high in neutral and mildly alkaline solutions, though acid combinations should be avoided.

It is an excellent choice in finishing dye lots where high concentrations of salt fixatives are required, for it shows stability in up to 1% sodium chloride solutions.

Easy to prepare, simple to use, LAURAMINE 314-A *beats all* for results!

Let this fine LAUREL product incease the quality of *your* yarn.

A generous sample of LAURAMINE 314-A awaits your request. Write today!

Laurel Brand

Laurel SOAP MANUFACTURING CO., INC.
Warehouses: TIOGA, THOMPSON & ALMOND STS., PHILA. 34, PA.
Paterson, N. J., Chattanooga, Tenn., Charlotte, N. C., Greenville, S. C.

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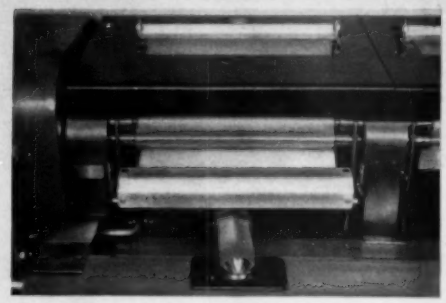
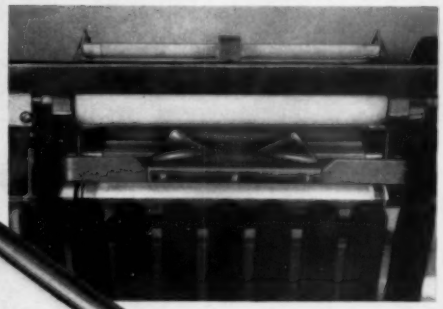
NOW — pick clearers only at the doff!!

NEW SACO-LOWELL SELF CLEANING UNDERCLEARER

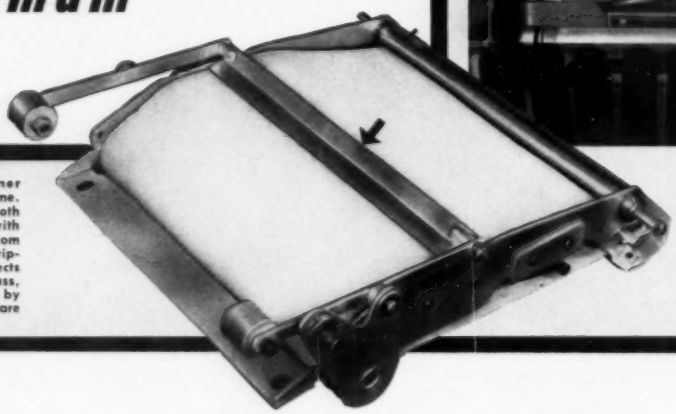
Reduces picking to a minimum



New Automatic Self-Cleaning Underclearer open to show clearer surface. Note the neat, compact design.



As an extra aid in reducing sliver variation, a new sliver pan is attached in such a manner that the distance from the nip of the back rolls to the pan remains the same, regardless of changes in roll setting.



Self-Cleaning Undercleaner demounted from the frame. The loose-fitting felt cloth is in constant contact with the surface of the bottom rolls. The oscillating stripping comb (arrow) collects the waste in a loose mass, which is easily removed by operator as full cans are doffed.

Wth mills everywhere facing increased cleaning and picking costs due to the sub-standard 1957 cotton crops, Saco Lowell Research has developed this new self cleaning underclearer assembly which can be applied to both 16" and 18" conventional Saco Lowell Drawing Frames. This time and labor saving changeover cuts opeating costs and improves sliver quality. In addition to eliminating picking except at the doff it offers these 4 advantages:

1. ***Continuous apron keeps roll surfaces clean and lint free.***
2. ***Keeps sliver free of slubs.***
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How To Be Fair and Accurate When You Evaluate Workers

• Judging workers by a single factor, such as output, can be a mistake. There are many other things to be considered, and the smart supervisor will not jump to conclusions.

By **WILMER C. WESTBROOK,** Assistant Editor, TEXTILE WORLD

Most supervisors have gauges to use in evaluating the worth of their employees. But if these gauges are not properly calibrated, they will give an inaccurate reading. No one trait, quality, or fault should be used to catalog, rate, or classify a person.

Many hobo weavers, for example, are experts at getting out production. Weavers are paid by piece rates, and these men gain skill and learn all the tricks as they go from mill to mill. Many supervisors welcome the hobo weavers and give them the most desirable jobs, even if shifting their regular weavers is required.

The supervisor knows that his new weaver will stay only a few weeks or months. But he also knows that he will squeeze every possible yard of cloth from the looms while he is on the job and will boost the output figures for the entire department.

What's not recognized sometimes is that the average hobo weaver's shortcomings far outweigh his good points. First, the other weavers will resent him, especially if he makes a much better production record than theirs. Second, he's primarily interested in the money he makes and will build ill will between himself and auxiliary workers such as loomfixers and smash hands by pushing them for more effort in his behalf.

He'll Soon Be on His Way

Third, he has little thought of tomorrow. He doesn't want his looms stopped for preventive maintenance. He realizes that they will probably have to be completely overhauled next year if they are neglected now; but by then he'll be on his way to another mill, another job.

Fourth, since he doesn't get paid for quality, he's not concerned about seconds. He learns the maximum number of defects that will get by and tries only to stay within those limits.

Fifth, having become masters of their trade, most hobo weavers have learned all the tricks and short-cuts. Many of them boost their earnings by doctoring pick counters; or they speed up the looms by soaping belts, changing motor pinions, or tightening clutches.

Sixth, the hobo weaver's demoralizing influence is not completely dissipated when he eventually quits. Weavers will once again be shifted to fill the vacancy. The one who succeeds to the departed weaver's job will find the looms in poor mechanical condition and the loomfixer and other workers discouraged.

He will have to try to bring the looms back to a point of high production of quality cloth, but he will have the production record of the former weaver hanging over his head.

Don't Neglect Other Factors

In the long run more is lost than gained by using total output as the only measure of an employee's worth. You need to use a yardstick that will measure many qualities and then show the total result. Evaluate him by a combination of productiveness, quality of workmanship, compatibility, reliability, and cooperativeness.

Consistent average performance is better than peaks and valleys that come out as average. The only route to continuous high production is by way of good employee morale, machine maintenance, and competent supervision.

When an employee fails to meet production goals, don't judge him too quickly. Do some research work. It may be that he is doing something now that will boost production later, such as having preventive maintenance done on his machines.

Also, before you condemn a worker for a poor showing productionwise, see how he is doing qualitywise. He may be spending some time helping learners and others, or he may be doing other chores that are invaluable to the department.

Goals May Be Set Too High

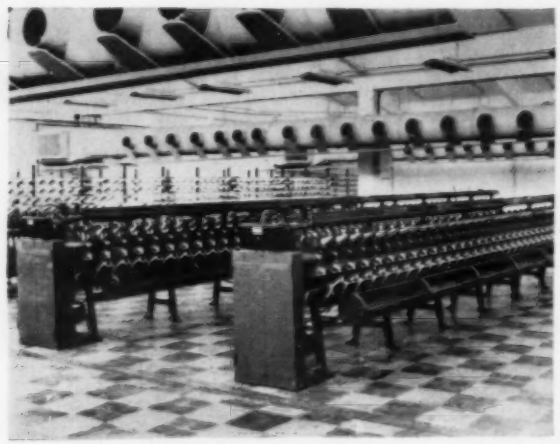
It might be well to review the goals that have been set for your workers. Too often these goals are set at a level that can't be reached consistently. If someone is setting a high production record, see how he does it before you set it up as a target for others to shoot at.

If the production record is being made at the expense of quality or future stability, correct the situation. And if the record is made possible by good management of his job, see that the same methods are used by other workers who have less envious records.

Whenever you have to evaluate an employee, don't jump to conclusions. Put all his virtues on one side and his vices on the other. If you do this impartially, the odds are that his good points will outweigh the bad.

Anyway, it will give you a chance to see where improvements can be made; and you may discover qualities that you didn't know existed.

Leesona ROTO-CONER®
—the winding way around the world



URUGUAY — Roto-Coners set up to wind onto paper cones. Machines are equipped with round bobbin boxes.

U. S. A. — Roto-Coners winding parallel tubes on one side, cones on the other.

GREAT BRITAIN — Roto-Coners winding open-wind knitting cones.

FRANCE — Roto-Coners coning 100s — 120s cotton yarn.

Every textile manufacturing country in the world uses Leesona Roto-Coners in quantity.

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Around the world they wind cottons . . . spun synthetic staples . . . wools . . . worsteds . . . linens . . . blends.

The exclusive *Rotary Traverse* on these machines eliminates all moving parts connected with reciprocating guides—permits high speed, reduces maintenance, and assures uniform packages and top quality yarn.

For facts and figures on why these versatile, dependable machines are popular around the world, write for the illustrated Leesona Roto-Coner booklet.

23.6.14

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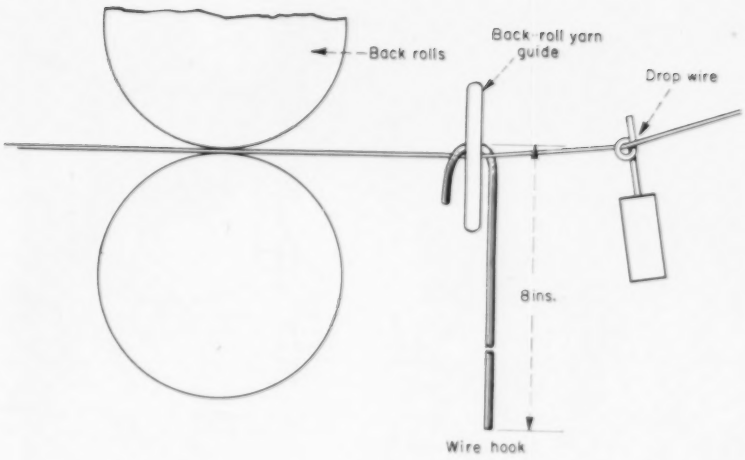


Hook Holds Broken End When Drop Wire Falls

We used to be troubled with excessive knots in fancy yarn produced at our spinning frames. Even though we had stop motions, broken ends and run-outs would flop around and tangle with other ends or wrap around the rolls.

We reduced ends down greatly by making hooks from $\frac{3}{32}$-in. steel wire and placing them in the yarn guides as shown. The hooks are 8 ins. long, and the openings in the yarn guide are $\frac{1}{8}$ in. in diameter.

The yarn passes under the hook that presses down enough to hold the yarn when the drop wire falls. (K-3770) *N. Primentos, Abbotsford, Australia*

Compute Belt Tension With a Quick Formula

Belts with too much tension wear rapidly. On the other hand, if you let them run slack, they slip. Belt tension can be computed easily with a formula if there's enough slack to be measured. For average belts:

Multiply the width of the belt in inches by its thickness in inches. Then multiply this number by 0.43 and call the answer P. Multiply P by the sag of the belt in feet and call this answer A.

Multiply P by the distance between pulleys in feet; multiply this number again by the distance between pulleys in feet. Multiply by 0.125. Then divide this number by the sag of the belt in feet, and call the answer B.

Add A and B, and the result is the exact total tension of the belt in pounds.

An example is:

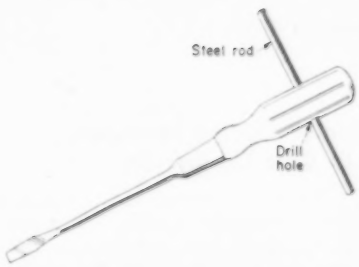
The distance between pulleys is 20 ft.; the sag is 6 ins., or 0.5 ft.; the belt is 6 ins. wide and $\frac{1}{4}$ in. thick.

$P = 6 \times \frac{1}{4} \times 0.43 = 0.645$

$A = 0.645 \times 0.5 = 0.322$

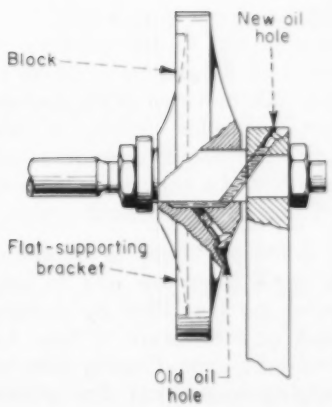
$$B = \frac{0.645 \times 20 \times 20 \times 0.125}{0.5} = 64.5$$

0.332 + 64.5 = 64.82 lbs. total tension. (K-3764)



Here's an Easy Way To Loosen Stubborn Screws

Many screws on our machines were tight or in awkward places. To help loosen these screws, we drilled holes through the center of our screwdriver handles and put a 6-in. steel rod through the hole to use as a lever when we meet a stubborn screw. (K-3693)

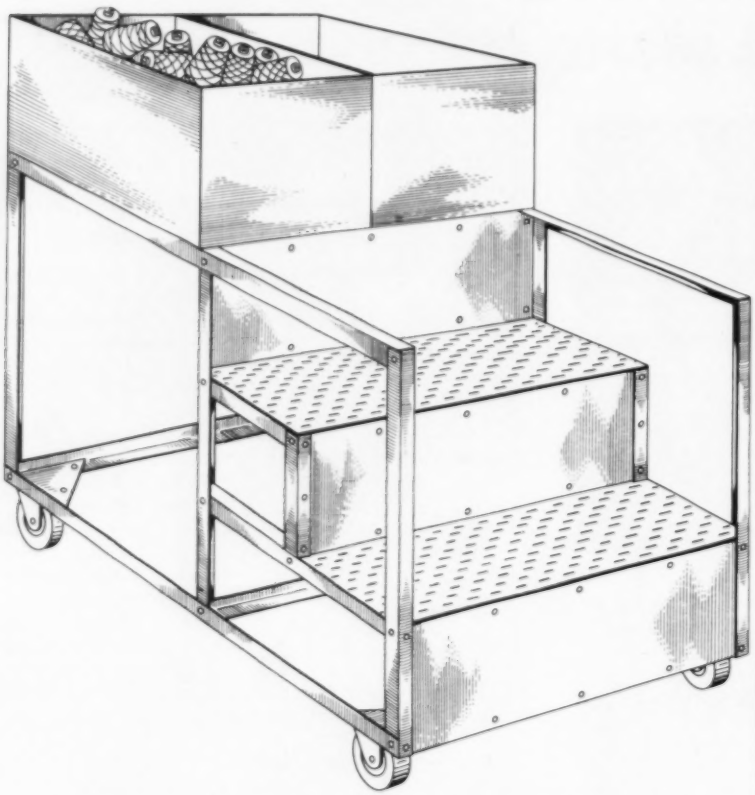


New Oil Hole Protects Card Clothing and Shaft

The original oil hole in the flat-supporting blocks on our cards was in the block itself. When the block turned and the hole was upside down, oil flowed out into the work. Sometimes the card clothing was damaged, and the shaft was not lubricated properly.

We stopped this trouble by drilling a new oil hole through the supporting bracket and the stay rod. The old hole was blocked up with a screw as shown in the illustration, and we have had no more trouble from this source. (K-3825) *I. Ben Tovim, Tel-Aviv, Israel.*

February Prize-Winning Kink



Storage Ladder Speeds Knitting-Machine Changes

Changing cones on automatic striper machines takes a lot of time, especially when different styles are made on the same machine.

We made a ladder for doing this job, and it has saved us lots of machine downtime.

The ladder is a stepladder on wheels that lock when weight is placed on them. We added a divided container on the top step to hold cones of yarn.

When the yarn on the machine has to be changed over, the operator puts the new yarn in one compartment of the container. The other compartment is left empty.

The operator mounts the steps to remove the old cones and puts them in the empty compartment. She then replaces the empty cone holder with a new cone from the full-container compartment. (K-3185)

The best Kink published in the February issue of TEXTILE WORLD, according to our reader-judges, was :

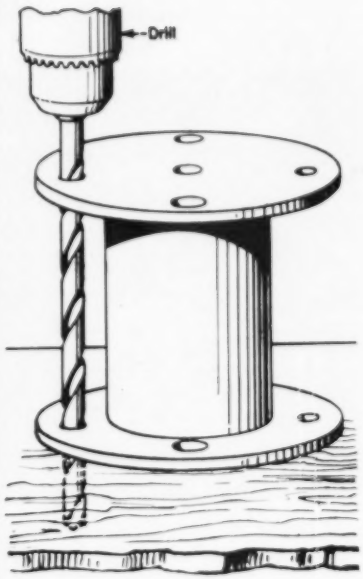
"Storage Ladder Speeds Knitting-Machine Changes"

The winner is being sent a check for $25 with the compliments of TEXTILE WORLD.

The prize-winning Kink is reprinted above.

Each month TEXTILE WORLD awards $25 to the submitter of the Kink judged by a panel of over 300 mill men as the best for that particular month. A new batch of Kinks appears each month, and a new group of readers acts as judges each month.

If you are asked to judge one of these days, be sure to help select the best Kink by sending back your answers in time for final tabulation. Closing date for judging is the last day of the month in which the Kink appears.



Use Yarn Spool To Guide Hand Drill

Old yarn spools make a handy jig when it is necessary to drill a vertical hole in wood or metal with a hand drill.

To make the guide, drill different-size holes in the top and bottom flanges of the spool. Be sure the holes are in perfect alignment and slightly larger than the drills to be used. (K-3689)

Level Knitting Machines To Cure Oil Streaks

We were bothered with oil streaks that continually ran down one side of the cloth from our circular knitting machines. We cleaned the spots where the streaks were located, but the oily marks returned when the machine had been running for several minutes.

We eventually cured the trouble by leveling the knitting machine. Shims were placed under the legs of the knitting machine on the side where the oil streaks occurred. The oil now gradually works to the low part of the cylinder and gets picked up by the needles at this part. (K-3224)

C.P. Starches...Try 'em for Size

Glass rods dipped into beakers show comparative draining ability and non-congealing qualities of Ten-O-Film, right, and conventional starch, left.

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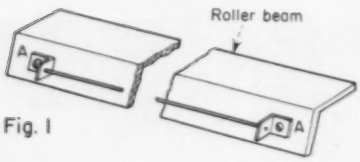

Fig. 1

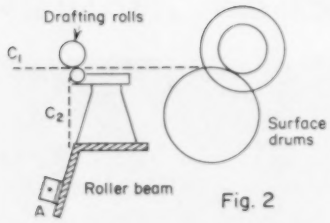

Fig. 2

Wire Reduces Faults in Mule Spinning

Many mule-spinning faults are caused by the operator piecing up an end after the delivery rolls stop. The sliver delivered by the rolls drops on the mule carriage and is carried out with it.

The operator often lifts the sliver from the carriage and pieces it to the yarn from the spindle during the drafting or twisting periods of the cycle. This operation causes a thick place in the yarn because the end has not been drafted to the same extent as the rest.

We've made an attachment in our mules that keeps ends from being pieced up after the delivery rolls stop.

Fig. 1 shows a section of the roller beam. Two brackets A are attached to either end of the beam, and a $\frac{1}{8}$-in. wire is stretched between these brackets. The space between the wire and front face of the beam is about $1\frac{1}{2}$ ins.

Fig. 2 shows an end section of the roller beam, drafting rollers, and surface drums. The sliver C_1 is shown by a dotted line where it runs from the nip of the rollers to the spindle. When a break occurs, the sliver follows the line C_2 and passes down in front of the roller beam.

This broken sliver falls on the flat top of the mule carriage and is moved away when the carriage moves. The sliver then slips off on the floor during the last few inches of the outward run of the mule.

If the wire is in position, the sliver passes behind it. When the mule moves away on the outward run, the sliver cannot be taken up and the operator cannot piece up the sliver if the mule carriage is more than halfway out on its outward run because the drafting period starts at this point. (K-3610) *R. K. Watson, Calverley, England*

Leather Loop Holder Keeps Flashlight Handy

Electricians and others who need a flashlight on the job will find a belt holder much handier than carrying the flashlight in a pocket.

A leather strap is connected with rivets to form a loop into which the flashlight slips easily. Another strap with a snap fastener is attached to this loop at right angles.

The flashlight is slipped into the first loop, and the other loop is snapped around the user's belt. (K-3426)

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What Is a Kink?

Any idea that will

- Cut costs
- Improve quality
- Reduce work
- Increase production
- Make work easier

The idea may be one for improving machines, some attachment for a machine, a short-cut way of doing something, a labor-saving device—any idea at all that helps a mill man run his job better or easier.

Send in your Kink now. There is always a contest going on.

RULES OF CONTEST

1. No limit to number of entries.
2. New $25 prize contest every month, $500 prize contest for the year. Monthly contest confined to Kinks published that month, yearly to those published in calendar year 1958.
3. All Kinks paid for on acceptance; extra payment for photographs. Drawings need not be finished (clear detailed pencil sketches will do).
4. Previously published material not eligible for prizes.
5. Unless you advise to contrary, we assume we may sign your name to Kink when published.
6. Prize winners will be selected by readers, a different group each time. At least 300 will be asked to select preferred Kinks in each issue. Their votes will select the best Kinks, and their decision will be final. In case of ties, duplicate prizes will be awarded.

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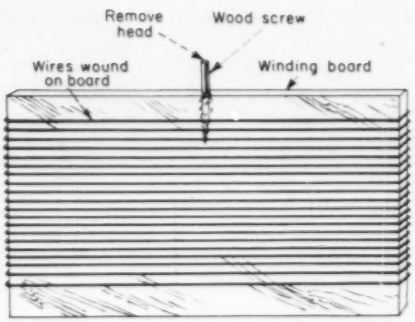
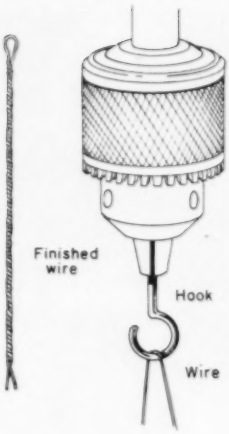




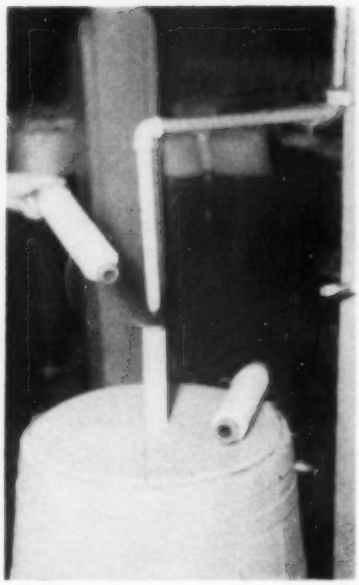
A Quick Way To Make Threading Wires

Threading wires for overlock machines or any other textile machine that has to be threaded can be made quickly and easily with the aid of a drill press and a winding board about ½ in. thick.

Cut the board width to the length you require the threading wires to be. Screw a wood screw in the edge of the board at the center, and cut off the head so the screw can be pushed in the drill press. Wind a length of brass or copper wire on the board.

When enough wire has been wound on the board, remove the board from the drill press and push a hook in the chuck of the drill press. Loop a wire over the hook, hold the wire ends with pliers, and start the drill press.

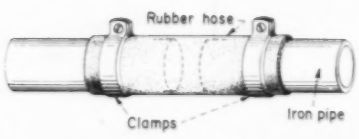
Let the machine run for 2 or 3 secs., and then switch it off. The threading wire is ready for use. (K-3733) *A. W. Oras, St. Jerome, Que.*



Roving Stripper Is Made From Barrel and Air Outlet

Here is a simple roving stripper that works fast and is foolproof. The unit consists of a barrel with a pipe stuck through the removable lid and a compressed air outlet.

The jet of air from the upper pipe blows the end through the lower pipe into the barrel. A bobbin of the size shown can be stripped in seconds. (K-3849) *Sylacauga-Central Plant, Avondale Mills, Avondale, Ala.*

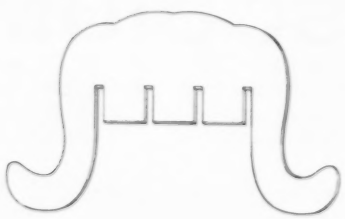


Auto-Radiator Rubber Hose Makes Emergency Pipe Repair

Leaks in steam or water pipes can be repaired temporarily with auto-radiator rubber hose. Saw out the bad section of pipe.

Then cut the radiator hose 3 ins. longer than the cut-out section so that the hose overlaps the pipe 1½ ins. at each end. Clamp the hose on the pipe with either screw-type clamps or spring clamps.

The hose will last for a long time, if necessary. But it can be removed at your leisure when you put in a new section of pipe. (K-3654)



Stop-Motion Bars Are Held With a Fibre Bridge

When the loom stop-motion bars or electrodes are not supported in the center, they have a tendency to sway and cause false stops. A bridge that is bolted to the stop-motion frame will often be off center and cause trouble.

I made a fibre bridge that is not fastened to the stop motion and does not have to be adjusted when a new warp is tied on. I have been using these bridges on W-3 looms with electric stop motions for 8 years. They can also be used on other types of looms. (K-3670) *Archie Darnbrough, Esmond, R. I.*

Measuring Tape on Warper Keeps Warps Within Limits

In our weave room, we have loom beams with fixed flanges. Sometimes the warps put on the sectional warpers are too wide or too narrow. We had the operator measure the width of the warp each time he started a new section, but this took a lot of his time and production suffered.

We reduced the time used in measuring by gluing a cloth measuring tape directly to the drum of the warper. Now the operator can tell at a glance just how wide the warp is, and he can set the comb to make it spread to the desired width. (K-3639) *Henryk Eiger, Ruti, Switzerland.*

Uniformity Is No Accident

Quality control can never be a push-button operation in the textile field. That goes for starch, too. So the uniformity of Victor Mill and other Keever starches is constantly checked and rechecked.

The Keever sales-service man who works with you is a trained specialist in mill problems. But he doesn't work alone.

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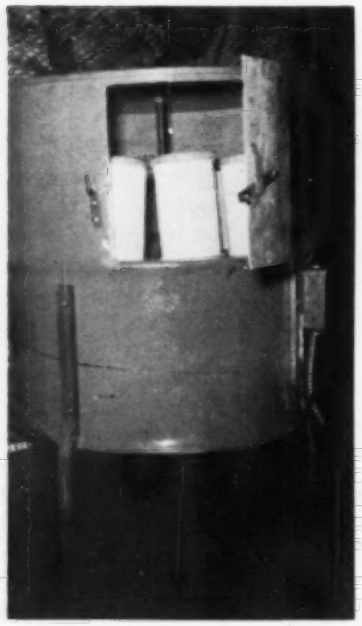
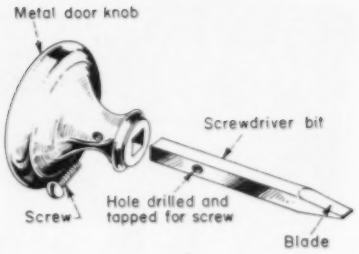


Oil Can Makes a Good Yarn-Conditioning Drum

We used to have trouble winding and weaving plastic yarns because of changing weather conditions, humidity, and static. To solve the problem, we built a conditioning drum for our raw material; and we use an antistatic oil during the winding operation.

We cut an oil drum in half and spaced three 200-w. electric-light bulbs on the inside bottom of the drum. The light sockets are of good-quality porcelain. The heat from the three bulbs is just enough to keep the drum hot; and to make the heat more uniform we lined the drum with aluminum foil for extra reflection. The drum can be set up like any floor lamp or mounted on casters.

A collar on the stationary steel rod in the center of the drum holds a round metal shelf that can be turned by hand through an outside door. Many holes are drilled in the shelf so that the heat furnished by the electric bulbs can get to the yarn at the top of the drum. (K-3687) *Joseph Hagl, Philadelphia, Pa.*



Door Knob on Screwdriver Turns Screws at Close Spots

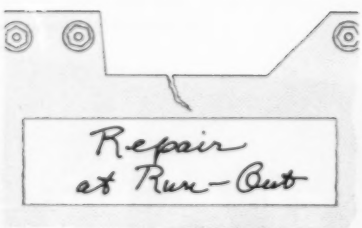
On many machines in a mill, there are large screws in hard-to-reach places. To tighten or loosen some of these screws, you need a short screwdriver.

You can make an excellent screwdriver for these places from a medium-size square screwdriver bit and a door knob.

Grind the bit off so that the blade is 4 ins. long. This blade will extend about 2 ins. into the door knob.

With the screwdriver seated against the end of the door knob, place a center punch through the screw hole in the door knob and mark the screwdriver. Remove the screwdriver, and drill and tap a hole in it for the door-knob screw.

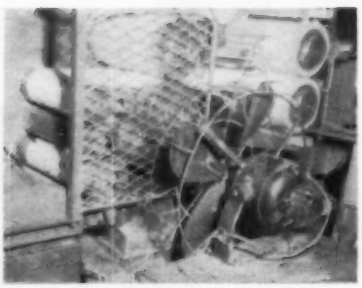
Then put the screwdriver back into the door knob and insert the screw. You can grip the door knob firmly so that screws can be tightened or removed with ease. (K-3738)



Memo on Machine Is a Reminder of Needed Repairs

Sometimes when a minor break or wear is discovered on beamers, looms, and other machines during production runs, it is best to run out the material before making repairs. As a reminder, especially in three-shift operation where more than one operator and fixer are involved, it is wise to leave a memo.

A piece of masking tape with a message written plainly on it can be attached to the machine in a conspicuous place to inform operators and fixers of the needed repairs. (K-3528)



Fan Keeps Heat Even At Turbo Stapler

We used to have trouble caused by the heating rolls on our Turbo stapler getting too hot. The trouble was temporarily solved by mounting a fan on a wooden table alongside the machine.

Although this temporary arrangement works satisfactorily, we plan to put an air-conditioning duct over the rolls, and we believe that our heat troubles will be solved permanently. (K-3773) *Rhyne-Houser Mfg. Co., Cherryville, N. C.*

Here's a Way To Stop Electrical Short Circuits

When connections in electrical junction boxes aren't wrapped correctly, short circuits are made that may take many hours to locate. The short circuits are caused when unwrapped pieces of wire touch the box; other shorts are caused if a connector is not tight.

To prevent these short circuits at our mill, we use the following method:

1. Tighten the connection securely with a wrench; tap the back of the connector with a hammer several times; tighten the connector again with the wrench.

2. Wrap the connector with rubber tape until all bare space is covered; then cover the rubber tape completely with friction tape. (K-3221)

RHONITE R-1

Makes fabrics fit for a Queen

This strikingly lovely beauty—Marilyn Van Derbur, Miss America 1958—models an Everglaze* wash-and-wear cotton from her official wardrobe. "Everglaze" fashion fabrics were developed by Joseph Bancroft & Sons Co., of Wilmington, Delaware. Because they are treated with RHONITE R-1, they require little or no ironing and keep their fresh, new look through washing after washing.

RHONITE R-1, a modified urea formaldehyde resin, is a monomeric product of such tiny molecular size that it penetrates and reacts inside the fibers of cottons, rayons and blends, providing life-long wrinkle resistance . . . dimensional stability . . . permanent surface effects. And all this without loss of desired handle.

More and more of your customers are buying easy-care, high-fashion "Everglaze" fabrics. Isn't it high time *you* found out about RHONITE R-1 for *your* "Everglaze" fabrics?

*Everglaze is a trade-mark signifying fabric processed and tested according to processes and standards controlled and prescribed by Joseph Bancroft & Sons Co.

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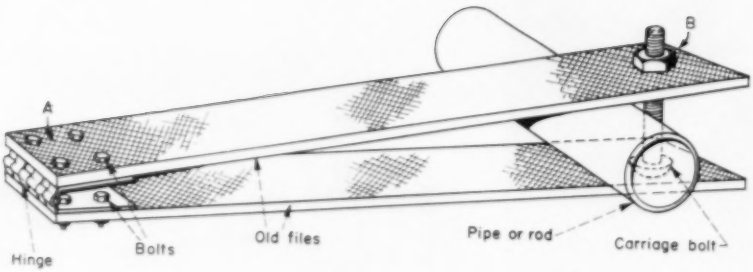


Old Files Make Grips for Pipes and Rods

Pipes and rods with threads over long areas can be tightened with a tool made from two old hand files. The files are annealed at the surfaces shown at *A* and *B* in the accompanying sketch.

Then bolt holes are bored in one end of both files at the annealed sections so that they can be fastened together with a hinge.

A second hole is bored in the other end of each file for a ½-in.-dia. carriage bolt; one hole is squared for the bolt.

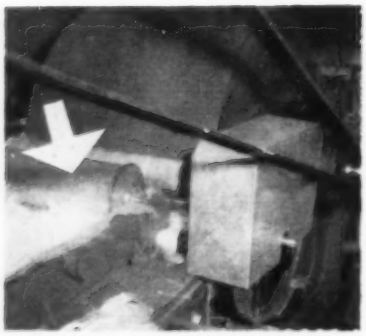
To use the tool, the end opposite the hinge is slipped around the pipe or rod to be turned. Then the ½-in. bolt is tightened to hold the files firmly against the pipe or rod.

The tool turns the pipe or rod without slipping, and it is put on and removed quickly. (K-3722) *W. E. Warner, Essex, England*

How To Clean Belts With Card Clothing

Leather belts on textile machines easily catch lint, which causes the belt to slip on the pulleys. Some fixers use a screwdriver to remove this lint, but you can make a good scraper with a piece of card clothing and part of a broom handle.

Cut off about 10 ins. of the broom handle, and wrap the card clothing around it. Tack the card clothing to the handle, and you have an ideal belt scraper. The cleaner can be cleaned easily by tapping it on a heavy object. (K-3226)

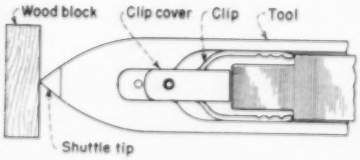


Cylinder and Feed Rolls Improve Waste Machine

When we changed over our combed-yarn mill to Orlon staple, an old waste machine was set up to process reworkable fiber. The machine stirred up considerable fly, and the stock didn't feed well into the beater.

The problem was solved by putting in four fluted steel feed rolls preceded by a floating metal cylinder (arrow).

The cylinder presses down the fluffy fiber so that it goes right into the bite of the feed rolls, and machine efficiency is greatly increased. (K-3782) *Rhyne-Houser Mfg. Co., Cherryville, N. C.*



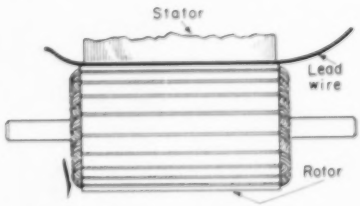
Driving Tool Makes It Easy To Seat Shuttle Clips

It is sometimes hard to put in a new shuttle clip without damaging the shuttle. A driving tool, as shown in the sketch, will seat the clip easily and without damage.

The tool is made of a piece of flat iron that is as wide as the inside of the shuttle. The shoulders of the tool fit against the ends of the clip.

To use, the clip and cover are started in the shuttle and the tool is placed against the clip and tapped with a hammer. As the clip is driven into place, the end of the tool also forces the clip cover into place.

Be sure to place the shuttle tip against a wood block or other soft object to prevent damage when the clip is driven into place. (K-3056) *G. R., Berwick, Pa.*



Quick Lead-Wire Test Shows Worn Motor Bearings

Unequal air gaps in an electric motor impair the efficiency of the motor and often cause motor damage because the rotor strikes the stator. These unequal air gaps can be detected for correction with a piece of lead wire as shown in the accompanying sketch.

To check the motor, remove the end plates and insert the lead wire between the rotor and the stator. Hold the wire at each pole of the stator and rotate the rotor a full revolution.

If the rotor touches the wire at any point, the rotor bearings are excessively worn. Use different-diameter wires for different-size motors.

Badly worn bearings show up immediately, but a more precise test can be made by energizing the coils of each pole. For this test, disconnect all stator windings except the coils at the piece of lead wire.

Then when these coils are energized, the rotor will be drawn to the stator so that it crushes the lead wire. Measure the thickness of the crushed wire, and you will know the absolute clearance under running conditions. (K-3754) *W. E. Warner, Essex, England*

Brainard Strapping

... WITH EXTRA BACKING

Brainard Steel Strapping has something extra to offer. As a division of Sharon Steel, Brainard Strapping is fabricated from steel that is quality controlled from mine to market. Sharonsteel, a buy-word among steel buyers, is your assurance of the finest steel strapping available when you buy from Brainard.

Sharon quality in Brainard Strapping is available in all standard sizes and gauges of tensional and heavy duty strapping.

SHARONSTEEL

Brainard Steel Strapping

SHARONSTEEL

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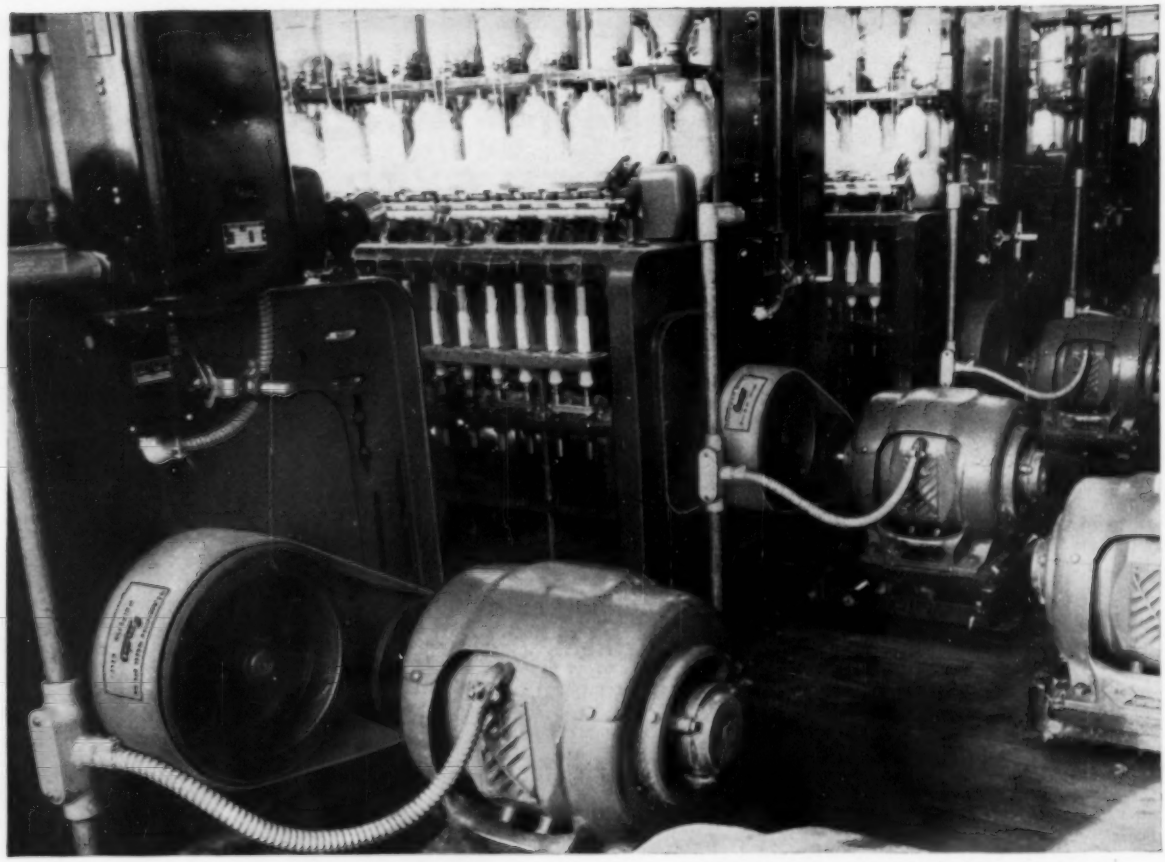

CONDOR ENDLESS BELTS OUTLAST 3 to 10 ORDINARY BELTS

. . . Give You "More Use ~~per~~ *for Your* Dollar"

Here's the all-purpose belt ideal for hard wearing installations—on drives with short centers and small take-up, small pulleys and reverse bends, *high* speeds and *heavy* loads at *high* tensions. Condor Whipcord Belt features an endless-wound, sealed-in cord construction which is destretched during manufacture. Extremely flexible, Condor Belts offer exceptional advantages where serpentine drives supply power for several operations. They won't shrink and are virtually unaffected by atmospheric changes. The exclusive Extensible-Tip cover end splice and rubber rivets dissipate stress when rounding pulleys to eliminate cover separation. The results? Condor Whipcord Belts have outlasted as many as 10 ordinary belts on the toughest drives!

Then there is Condor Compensated Belt, specially engineered for closed drives where fasteners are required. A patented process *equalizes* belt ply stresses when rounding pulleys. *Every* ply is under uniform tension . . . *every* ply pulls its *full* share of the load. Ply rupture and separation are eliminated—*especially at the fasteners.* Condor Compensated Belt holds fasteners up to 4 times longer than an ordinary belt!

Trouble-free power delivery and longer service life begin when you specify Condor Endless Belts at your mill. Both Condor Whipcord and Condor Compensated Belts are available in a selection of driving surfaces to meet your machine tension requirements. Let an R/M representative help you select the belt engineered to give "More Use for *Your* Dollar."

BELTS • HOSE • ROLL COVERINGS • TANK LININGS • INDUSTRIAL RUBBER SPECIALTIES

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

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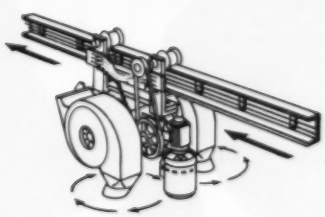
Introducing the AMCO HELICLONE LOOM CLEANER

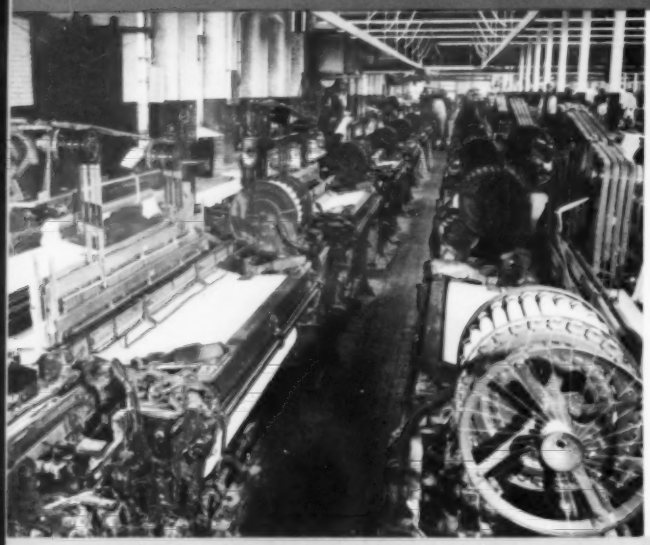
Pat. Pend.



- **Provides automatic, continuous cleaning of looms and ceiling**
- **Drastically cuts loom cleaning and loom maintenance costs**
- **Steps up production — looms need not be stopped for manual cleaning**
- **Improves quality of fabric**
- **Reduces fire hazard**
- **Improves weave room appearance**
- **Boosts employee morale**
- **Can be used in conjunction with beam handling equipment**

Swiftly whirling outlet nozzles, driven by the air stream, direct the air jets at an acute angle in overlapping, circular paths. The result is a rapid series of high-velocity bursts of air over loom and warp surfaces for complete cleaning action. Supplementary air outlets clean overhead track and ceiling.

AMCO Heliclone cleans automatically



AUTOMATIC CLEANING where overhead track brings full air sweep of loom cleaner to every loom on the floor without disrupting operation of the loom, keeping looms constantly free of accumulated waste.

MANUAL CLEANING of waste accumulation with air hose. This method, used by most mills, is very costly in terms of labor and is a constant source of accidents and cloth imperfections.

Tested and proven in mill after mill, the Amco Heliclone Loom Cleaner has brought conversion of entire mills to automatic loom cleaning. In the several plants already converted, Heliclones are a major factor in outstandingly high quality production.

Automatic cleaning eliminates end runs and floats, waste bunches, end breakage,overshots, broken picks, and oil spots caused by loose accumulated waste.

Heliclone Loom Cleaners are now cleaning the automatic looms which weave these important fabrics:

Broadcloth
Colored Stripes
Print cloth
Twills
Ginghams
Typewriter cloth
Synthetic blends
Toweling
Worsteds

Looms which are now being cleaned automatically by Amco Helicone Loom Cleaners:

Crompton and Knowles C-5
Hunt Looms
Stafford Looms
Draper X-2, XD, K
Warner and Swasey

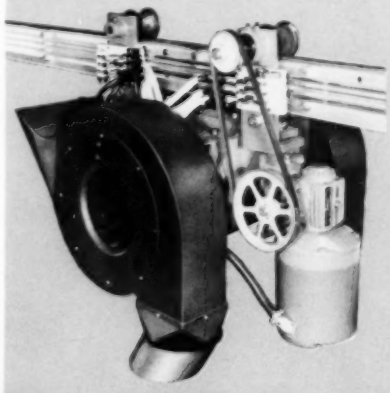
For winder cleaning . . . a unit similar to the Heliclone Loom Cleaner, with gentler cleaning action, is offered by Amco — the winder cleaner model. Here Schweiter-Whitin Filling Winders are being cleaned in Quiller room.

AMCO

AMERICAN MOISTENING COMPANY

Makers of Air Conditioning Systems and Textile Mill Equipment Since 1888

Home Office and Plant: Cleveland, N. C.
Branches in Atlanta, Providence, Toronto



- **All air handling passages and exterior of blower housing are fully coated with Teflon.**
- **Simplicity of design (minimum number of moving parts) assures long life and easy maintenance.**
- **Power is supplied to the unit by a *safe* 55 volts, utilizing Heliclone's simplified electrical system.**
- **Air stream is carefully controlled by circulating nozzles on two sets of ball bearings of "sealed-in lubricant" construction.**
- **Pitch of blade, responsible for "wind mill" rotation of the nozzle, can be adjusted to control its speed.**

Do you need help on a technical problem? TEXTILE WORLD is at your service in helping solve problems in yarn manufacturing, weaving, knitting, dyeing, finishing, and other textile operations. A large staff of mill men, consultants, and other experts are available for authoritative answers. Send your problem to the Editor, Questions and Answers, TEXTILE WORLD, 201 E. Coffee St., Greenville, S. C.

Drafts and Doublings for Fine Cross-Bred Wools

Technical Editor:

We are running 58s-60s wool with a maximum length of 7½ ins. and are having trouble getting the correct-weight slubbing. What drafts and doublings are best for this wool? (1362)

Here's a normal layout for fine cross-bred wools:

Operation	Doublings	Draft
1. Can gill	5	6
2. Spindle gill	4	6
3. 1st drawing	4	6
4. 2nd drawing	4	6.5
5. Finisher drawing	3	7
6. Reducer	3	7.5
7. Rover	2	7.5

Normal delivery weights at the gilling operations are about 8,750 grains per 40 yds. for the can gill and 6,550 grains per 40 yds. at the spindle gill for this wool quality.

These slubbing weights could be attained from a 6-oz.-per-10 yd. top if you use the drafts and doublings outlined here.

An Operator Can Tend 36 Bobbin-Winding Spindles

Technical Editor:

We have 36 spindles of Whitin Schweiter bobbin winders. We use an 8¾-in. bobbin, and our average yarn number is about 2-run woolen. We would like to equip our winder with an automatic bobbin loader. Can one operator handle 36 spindles if she only replaces the 1½- to 2-lb. cones and repairs broken ends? (1372)

If the yarn is strong and few end breaks are encountered, one operator should be able to take care of 36 spindles with an automatic bobbin loader. If there are end breakages, an operator may take care of 36 spindles; but production will drop. The important thing is to set the workload so that the winding machine is operating at its maximum efficiency.

Proper training of the operator is also important. The patrol system that has been adopted in most mills should prove helpful. The operator starts at the first spindle, checks it visually, and continues toward the end of the machine.

At the first end break, she repairs and starts that spindle. Then she continues working down the line, going in one direction and not looking back. When she reaches the end, she reverses the procedure and works back to the other end of the winder.

Make certain that all yarn is removed from the bobbins before they go into the loading hopper. Loose ends of filling may catch in the bearings of the spiral feed shaft and cause the pins on the shaft to break. Yarn on the bobbins may also cause the bobbins to catch in the bobbin slides and prevent the bobbin from changing.

Two Methods To Weave Unsupported Metallic Yarn

Technical Editor:

We are seeking a method to weave metallic yarn in the filling direction without twist. We've heard of a small bobbin that turns in the shuttle. Are there other methods to do this job? (1343)

Using a small bobbin that turns in a shuttle for weaving metallic yarns would be feasible on slow-running looms but not on high-speed looms. The turning bobbin used many years ago had the filling yarn coming out of a porcelain eye fixed in the center of the shuttle. The yarn package is very small and would have to be replenished more often than the automatic-loom quill of today's modern looms.

Weaving metallic yarns in a flat state would require the yarn to be unwound and fed into the weave without twists or turns. But a loose bobbin inside the shuttle would soon damage the holding device and the bobbin ends.

In one mill, the yarn is fed from a revolving package on the quiller over a small revolving pulley and down through the guide onto the quill. This keeps the yarn flat until it is past the guide. Most turns are formed as the quill unwinds from the shuttle into the weave.

In another quill-winding process, the yarn feeds counterclockwise over-end from a stationary package. When the yarn feeds onto the quill in a right wind, some of the turns come out. Many of these yarns are quilled at speeds of 5,500 rpm., but slower speeds on the unsupported yarns are better.

Adjust Tension To Remedy Warping Trouble

Technical Editor:

We are running blue denim and are having trouble with a slack warp in the middle of the beams while beaming. Do you have any suggestions to remedy this condition? (1353)

Most of your trouble is probably caused by incorrect tension at the beaming frames. If there is not enough tension on the chain when the yarn comes up in chain form and then is spread on the comb to go on the section beam, the ends in the middle of the spread in the comb will tend to run slack. The ends that are spread further out will have increased tension on them.

The chain warp is passed several times around a reel and drum, which are usually located 20 to 25 ft. apart. The drum on standard beaming frames is provided with brake bands and an arm on which weights can be added. By increasing the weight on the brake drum or increasing the number of passes of the chain warp from the reel to the drum, we feel you can eliminate this condition.

Tips on Slashing Blue Denims

Technical Editor:

We are running blue denims with 9.5s warp and 8s to 16s filling with 42 to 46 ppi. The ends stick together, and the ends in the middle of the beam break more than the other ends. We have a two-cylinder slasher and keep the temperature to 85 to 87° C. The yarn stretch is about 1.12%. The number of ends is 2,339 to 2,794, and the size pickup is about 10%. What do you suggest? (1354)

We feel that the temperature of the size box is rather low. This box should be kept close to the boil; so run the temperature up to 97 or 98° C.

The size pickup also seems low. Common practice is to run about 12% of added size on the warp. By raising the temperature and without changing any settings of the squeeze rolls on the size box, you could expect another 1% or so pickup on the warps.

Beamer hands have their own ideas of the tension they should apply and will adjust weights according to how the yarn is spread over the comb on the beamer. By applying more tension, the slack ends will not have a tendency to contact each other and dry over the slasher cylinder with a film of starch bonding them.

Use a Funnel Guide To Prevent Sliver Splitting

Technical Editor:

We are frequently troubled by the sliver splitting at the can gill box. The sliver falls apart when it runs out of the can at the two-spindle box. This trouble usually occurs when we blend wool with mohair or rayon. Do you have any suggestions? (1369)

You can eliminate this trouble with a special funnel guide with a brass-knuckle insert supplied by British machine builders. The sliver passes over and folds around the brass insert of the funnel. This method also improves blending during gilling.

Leave Space on Bobbin For Best Winding

Technical Editor:

How should we set our ring-rail speed and coils per inch to wind 13.5s yarn from the bobbin for a spooler? (1377)

At least $\frac{1}{32}$ in. between the coils on the bare bobbin is necessary for a suitable wind on a $\frac{13}{16}$-in.-dia. bobbin containing 13.5s yarn. A little more than $\frac{1}{32}$-in. space might be necessary. You should have 23 tpi on the bare bobbin to give you a satisfactory build.

We think that an open wind is better than a wind where the threads are too close to each other. You should leave a minimum space of $\frac{1}{32}$ in. between the coils of yarn on the bare bobbin.

Humanics — A TW Brief

Should Supervisors Help Recruit New Employees?

Jim Blair and Wade Humphrey were discussing various problems of their supervisory jobs.

"I'll tell you one thing I don't like about being a supervisor," Jim said. "People that I've never seen before come to my house to see me about a job in the mill. They even stop me on the street to pester me to hire them."

"What do you tell them?" Wade asked.

"I tell them flatly that I don't have anything to do with the hiring of employees and for them to tell their troubles to the personnel director because he gets paid to listen to them. How do you handle the problem?"

"I also refer them to the personnel department," Wade replied, "but I listen to what they have to say. It does no harm to be sympathetic with an unemployed person. Of course some will try and get a job on the strength of a hard-luck story, but the ones that impress me favorably are asked for by name when I need a new employee."

"I think it's the personnel director's job to interveiw applicants," Jim argued. "He can check their records and references; so I let him choose all my replacements."

"It's true that the personnel director has the responsibility of screening applicants," said Wade, "and I let him do the screening. But he does interviewing and hiring for the entire plant. I still think I can get new employees that are better suited for my department by helping choose them."

As a supervisor, how do you handle the problem of prospective employees? Which supervisor do you think is right, Jim or Wade? Or do you have another solution? Write the Editor, TEXTILE WORLD, and state your views on the matter.

Cotton Mean-Length Values Are Not Easy To Figure

Technical Editor:

Our laboratory analysis for SLM 31/32-in. cotton shows a minimum mean length of 0.53 in. and a maximum mean length of 0.59 in. According to an article in TEXTILE WORLD, March, '50, p 129, Upland cotton should be classed as a minimum mean length of 0.7 in. and a maximum mean length of 0.78 in. Why the difference? (1376)

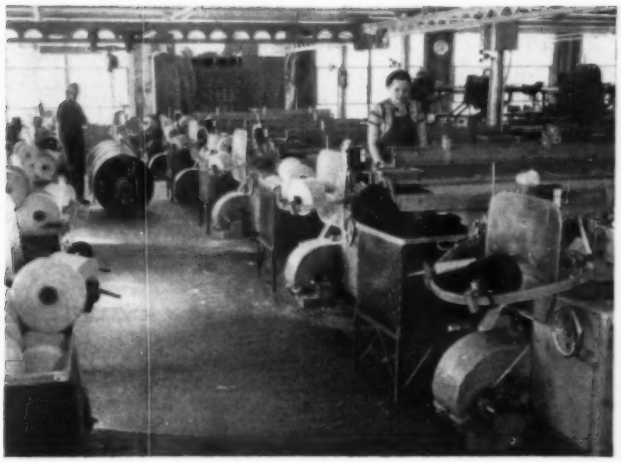
Your cotton sample is up to the $\frac{31}{32}$-in. specified length. No evidence of excessive short fiber was noted. Compared with a standard sample of 1-in. cotton with 0.83-in. mean length, the sample has an estimated mean length of 0.74 in. to 0.78 in.

Unless fiber weight-length values and not fiber-number frequency values were used in plotting array diagrams, the fiber-length outline has little significance in estimating mean-length values.

We believe that either the selection or preparation of the specimen, method of arraying, measuring, or calculating is partly responsible for the very low mean-length values of 0.53 to 0.59 in.

Cotton should be bought by sample or established type. It cannot be purchased on specified mean length, but it can be rejected if it contains an unreasonable amount of short fiber in excess of that shown in the sample or type.

We suggest that spinning tests be made on this alleged short mean-length cotton in comparison with the normal 0.78-in. mean length. Waste tests, operating behavior, and yarn strengths will show relative values better than fiber-length measurements do.



"We would do it again!"

States George A. Dorr, President
DORR WOOLEN CO.
GUILD, N. H.

"After six years of continuous operation, our Warner & Swasey-Sulzer Weaving Machines have enabled us to remain competitive in our highly specialized business. How do we feel about them? We would make the same investment in these machines again."

Here are a few facts that help make the above statement possible:

- **18 machines replaced 32 of a different type.**
- **Special processing and handling of Weaving Machine yarns is not required.**
- **4 pound filling packages reduce labor needs and, because the bobbin-carrying shuttle has been eliminated, there isn't any filling waste.**
- **Machines have attained an efficiency of about 90%.**
- **All metal beams hold maximum amount of yardage, minimizing dressing, beaming and warp changes.**
- **Burling and mending have been reduced considerably.**

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Cleveland
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TEXTILE MACHINERY DIVISION

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The Year Advertising Helped

This editorial message was first published by McGraw-Hill two years ago. It describes advertising's dramatic contribution to the American economy during 1954. The theme of the editorial—that advertising can help promote economic stability by stimulating sales at a crucial time—is even more pertinent today.

As our economy grows, it is constantly changing. The conditions business faces today are not the same in every respect as those it faced in 1954. But business again has the opportunity, through advertising and other selling efforts, to help sustain a high level of economic activity. At the same time, it will be building markets for the period of renewed expansion that is sure to follow.

This editorial is reprinted exactly as it appeared in 1956 except for minor editorial changes to bring it up to date. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.

Donald C. McGraw

PRESIDENT

McGraw-Hill Publishing Company, Inc.

IN 1954 we had a business recession in the United States. Sales fell about 4% during the year. If management had followed the historic pattern of business ups and downs, advertising volume would have fallen much further.

But in 1954 the volume of advertising did not fall. It increased over 5%, and expenditures in all major advertising media rose. Every effort was made to stimulate sales when sales were needed to sustain prosperity.

This was something entirely new under the sun. It had a powerful influence in making the recession of 1953-54 one of the mildest on record. It helped greatly to speed business on to the record-breaking levels it attained in the years 1955-57.

There are several reasons why America's business management attacked this decline in sales with more advertising. One of them grew out of the greatly strengthened position of the American consuming market. Consumers' income after taxes has been rising an average of over $10 billion a year since 1946, and this rising income is more widely distributed than ever before. Furthermore, consumers had piled up reserves of about $200 billion in cash or its equivalent. These reserves offered a new and powerful inducement to increased selling and advertising effort even in the face of a possible decline in consumer income. (At the end of 1957, consumer reserves were $225 billion.)

Taking the Longer View

However, the principal reason why a sales decline was attacked with increased advertising is management's new-found conviction that good advertising is essentially an investment in the development of a market. Successful development requires sustained investment. The inclination of business management to take this longer view is, of course, motivated

McGraw-Hill PUBLISHING COMPANY,

ABP HEADQUARTERS FOR

Kill a Business Recession

by the fact that the American market, with over 3 million consumers being added annually, is growing at a prodigious rate.

Ten years ago only a handful of companies had plans for investment in new producing facilities extending beyond the current year. Today almost all leading companies have investment programs running some years ahead. And keeping pace with these long-range investment plans has been the development of sales and advertising programs to reach tomorrow's greatly expanded markets.

Advertising's Key Role

This crucial role of advertising in providing driving power for our economy is gaining greater recognition every day. In his book, "People of Plenty," Professor David M. Potter of Yale University remarked: "Advertising is not badly needed in an economy of scarcity, because total demand is usually equal to or in excess of total supply, and every producer can normally sell as much as he produces. It is when potential supply outstrips demand—that is, when abundance prevails—that advertising begins to fulfill a really essential economic function."

Today abundance so completely prevails in the United States that it has been conservatively estimated that as much as a third of everything offered for sale falls in the realm of "optional consumption." That is, consumers can "take it or leave it" without any immediate personal inconvenience. But if they decide to "leave it," a terrific economic depression will not be far behind. In such circumstances, advertising—in which, in all of its forms, we are now investing over $10 billion annually—clearly is of crucial importance to our continued prosperity.

In performing its key role in past years, American advertising never realized its full potential. It successfully promoted sales. But it never was called upon to promote an overall economic stability as a direct outgrowth of increased sales.

By successfully promoting both sales and economic stability, as it did in 1954, advertising surely has added new strength to the American economy. It has also added a great new and constructive dimension to advertising itself.

One of the surest means of expanding your sales volume in today's industrial markets is through dominant advertising in the publications directly serving your major customers and prospects.

McGraw-Hill's business and technical publications can give you quick access to the men who initiate, specify and approve the purchases of industrial products and services. Because all are leaders in their respective fields, you are assured a maximum return on your advertising investment when you *concentrate* in the McGraw-Hill publications serving your most important markets.

INCORPORATED · 330 West 42nd St., New York 36, N. Y.

BUSINESS INFORMATION

In baseball it's the Braves

In colored yarns it's Franklin-Dyed

And here are the reasons:

QUALITY

We dye yarns exclusively on the Franklin compressible spring. This permits uniform density of packages, which promotes uniform penetration of the dye liquor and uniform shades.

SPECIALIZATION

Yarn dyeing is our specialty. We don't dye just to make yarn sales. Our entire organization has but one objective — to provide the best yarn dyeing service available.

CAPACITY

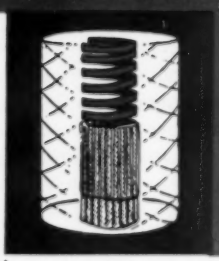
With 4 dye plants, hundreds of package dyeing machines in dozens of sizes and winding equipment to match, we are literally the largest package dyers in the world — ready to dye all types of spun fibres in any quantity.

CONSULTATION

We can help you with your color problems. At your service we have unequalled laboratory facilities, a staff of highly skilled technicians and unequalled experience in time, variety and volume.

AVAILABILITY

Our 4 yarn dyeing plants, strategically located in 4 different textile centers, are conveniently yours. Contact our nearest plant or office.



X-ray view of Franklin Package, the "secret" of uniform shades. Don't say "package dyed". Say "Franklin-Dyed".

Franklin Process

A DIVISION OF INDIAN HEAD MILLS

Dyers of cotton (carded, combed, mercerized) Orlon* (yarn & tow) Acrilan • Dacron** • Ban-Lon® • Helanca • Spun Nylon • Spun Rayon • Blends • Wool and Worsted yarn

Philadelphia • Greenville
Chattanooga • Fingerville, S. C.
New York Office — 280 Madison Avenue

*Trademark for Dupont's acrylic fibre
**Trademark for Dupont's polyester fibre

3-8

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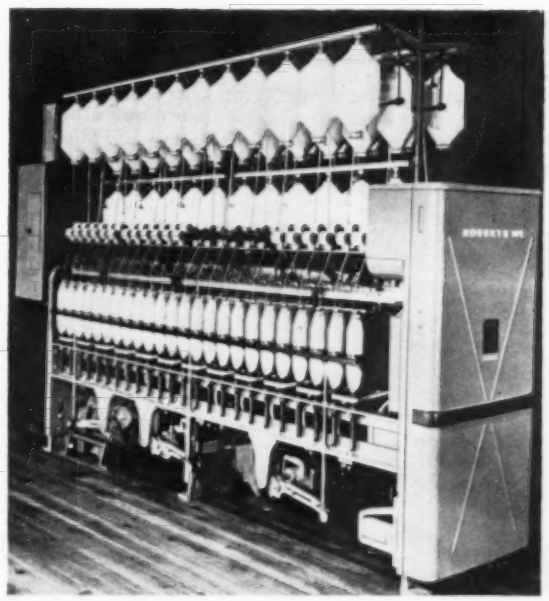


Narrow Spinning Frame

A spinning frame available in three widths with 250 to 350 spindles has been announced by Roberts Co., Sanford, N. C. One model is only 25 ins. wide; other widths are 36 and 39 ins. The M-1 frame, equipped with double-apron drafting, spins cotton, man-made fibers, and blends.

Features include an improved bobbin builder, large rings, long traverse, and sealed top-roll bearings.

The manufacturer claims the frame increases yarn breaking strength and evenness, lowers operating cost, reduces cleaning and maintenance time, and eliminates roving processes.

Circle T-1 on Reader-Service Card

High-Frequency Dryer

Rayon cakes can be dried continuously and quickly in a high-frequency dryer built by New Rochelle Tool Corp., 320 Main St., New Rochelle, N. Y.

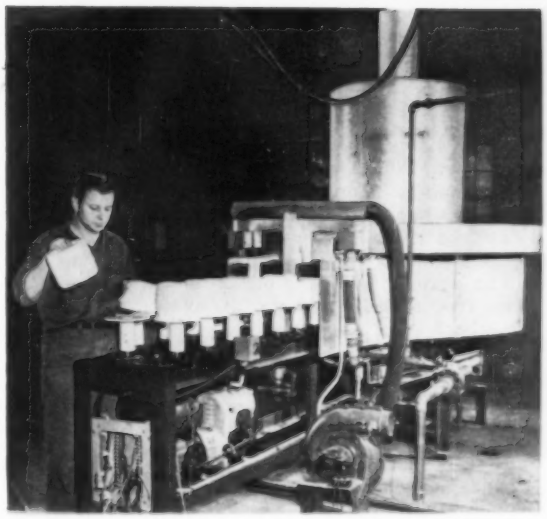
The cakes pass through a circular enclosure on an endless belt and are led around a high-voltage grid. Potential between the grid and the grounded exterior wall produces a rapid drying effect on the interposed rayon cakes.

The rayon cakes are uniformly heated by this system, which eliminates shrinkage strains and migration of water-soluble impurities.

The dried cakes are delivered with normal moisture regain at a rate of five tons per day. All water vapor is condensed to hot water that can be used in process. Should an arc form accidentally, power is shut off in one-millionth of a second and no damage is done to the rayon.

The dryer consumes 500 w. per lb. of water evaporated and requires a 220-v. 220-kw. circuit for its operation.

Circle T-2 on Reader-Service Card



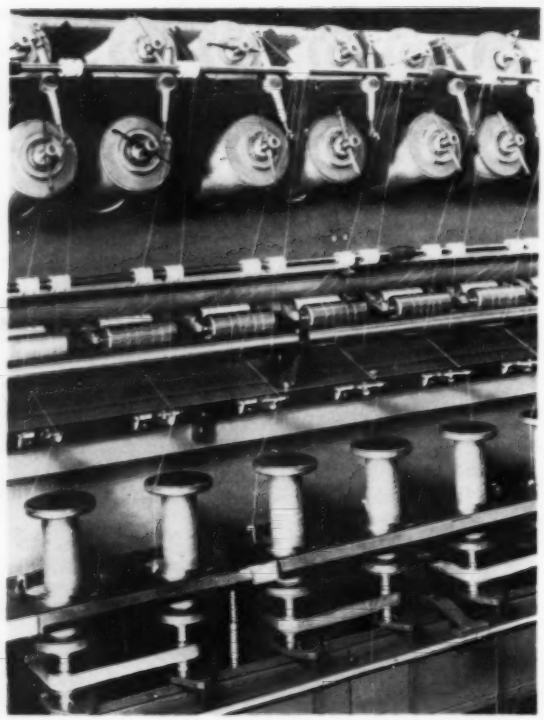
Spindle and Shaft Locking Device

A new eccentric-type locking device for use on winder spindles of all types, including straight blade and arbor types, is announced by Louis P. Batson Co., Box 772, Greenville, S. C. The device can also be used on winding-up shafts on inspection tables, cloth-slitting machines, and other textile machines.

The device makes the spindle easy to doff and to start because no tool is required to lock the yarn carrier in position. Operators can service more spindles with less downtime than with conventional spindles.

Installation of the spindles requires only a few minutes, and there's no maintenance. There are no blades to weaken or break, no clutch to wear out or slit, and no springs to weaken or break.

Circle T-3 on Reader-Service Card



Tire-Cord Twister Cabler

Continuous-filament viscose or nylon for tire cord is cabled and twisted in a single operation on a new machine announced by Platt Bros. (Sales) Ltd., Oldham, England. The American sales agent is Atkinson, Haserick & Co., Inc., Framingham, Mass., and Charlotte 2, N. C.

The machine has two sides and is built on two levels, with both rings and uptwisting features. The standard model is 9-in. gauge, with rings 6 ins. in diameter, and produces packages of 4 to 5 lbs. of finished cord. With the same 9-in. gauge, 9-lb. packages can be made by increasing the ring diameter to 7 ins. and increasing the length of the traverse.

Frame specifications are: 120 spindles, space for 240 double-flange creel packages, over-all length 50 ft. 2 ins., width at head end 41 ins., over-all width 48 ins., height of top creel spindle 66 ins., over-all height 70 ins., and spindle speed 4,000 rpm.

Circle T-4 on Reader-Service Card

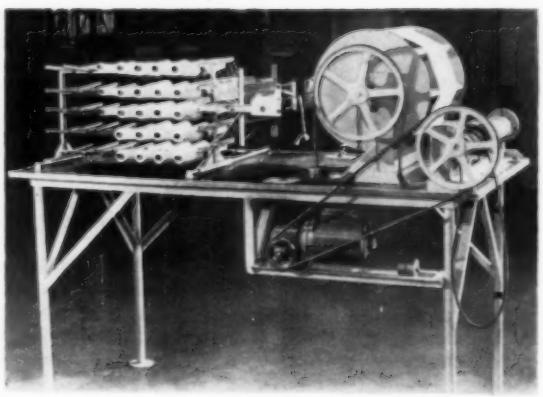
Laboratory Warping Unit

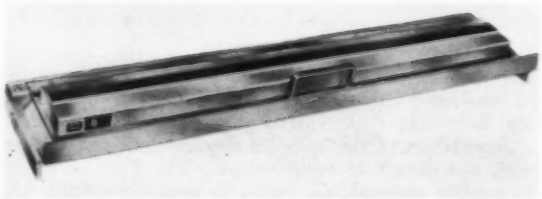
A complete laboratory warping unit has been developed by Edward J. McBride Co., Cottman & Wissinoming St., Philadelphia 35, Pa.

The unit is complete with creel, warping reel, and beaming attachment. Warp preparation for small hand looms and miniature power looms is a fast, fully controlled operation with this warper.

The warping unit is expressly designed for use by fabric stylists, design departments of weaving mills, textile schools, and laboratories.

Circle T-5 on Reader-Service Card





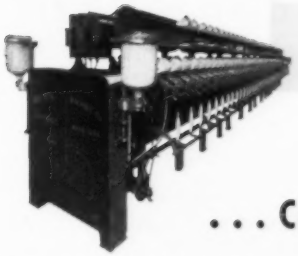
Circle T-6 on Reader-Service Card

Tramp-Iron Magnet

A low-cost but powerful spike-apron magnet for carding and garneting machines has been announced by Eriez Mfg. Co., 1425 Grove Dr., Erie, Pa.

Designed specifically for light-duty applications in woolen and worsted mills, the new unit is also adapted to installation over feeders handling cotton and waste materials.

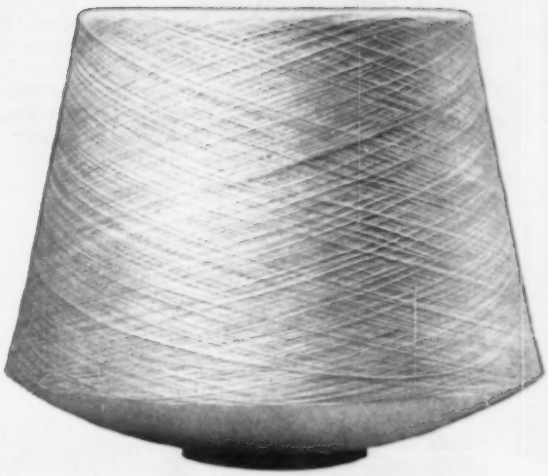
The new model, available in lengths from 18 to 72 ins. in 2-in. increments, has an aluminum angle frame that can be quickly adjusted within any fraction of 2 ins. to fit the dimension of the feeder frame to which it is attached.



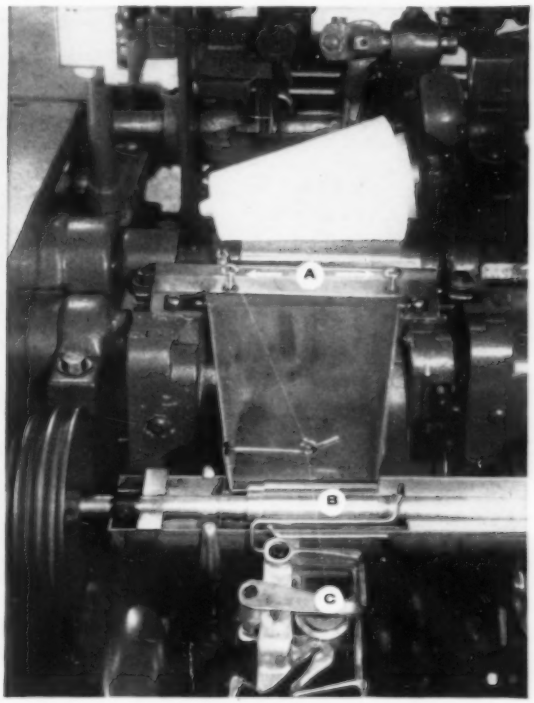
FOSTER MODEL 102-C

For Backwinding Bulk Yarns

. . . Cones that are Kind to Knitting Machines



Cone of Ban-Lon yarn wound on Foster Model 102-C.



Closeup showing mushroom bottoms (A), moistening attachment (B), and tension attachment (C).

The adaptation of the Foster Model 102 for the winding of bulk yarns is one of many examples of this machine's flexibility. The production of cones that are "kind to knitting machines" involves special winding problems. Here's how Foster solves them with the Model 102:

CONE QUALITY is equal to that obtained on the Model 102 with conventional yarns. Increased taper reduces yarn drag and equalizes tension at all cone diameters.

A YARN CONDITIONER (stainless steel) can be supplied with this machine. It applies any kind of emulsion or oil in any degree desired, without sacrificing winding speed — restores normal moisture, gives a soft hand and lubricates the yarn for better knitting.

MUSHROOM PINS, inserted in the thread bars inside of the extremities of the normal traverse (see illustration), prevent overshot and undershot cones.

TENSIONS are made with fine micro-inch finish, hard carboloy inserts, large chrome-plated tension washers and alsimag tension post. They assure snag-free, long life under highly abrasive conditions.

TRAVERSE GUIDES also have carboloy inserts and fine micro-inch finish.

Find out what the Foster Model 102-C Winder will do for YOUR bulk yarns. Ask us to wind some sample cones.

FOSTER MACHINE COMPANY

A Yarn Winder for Every Purpose

Westfield, Massachusetts, U.S.A.

Southern Office — Johnston Bldg., Charlotte, N. C. • **Canadian Representative** — Ross Whitehead & Co. Ltd., 1475 Mountain St., Montreal, Que. and 100 Dixie Plaza, Port Credit, Ontario **European Representative** — Muschamp Textile Machinery Ltd., Keb Lane Bardsley, Oldham, England.

For more data, write this page number on Reader-Service card. →

Hank-Dyeing Machine

A machine for conventional dyeing of woolen or blended yarns in hank form is available from Industria Lavoraziani Metalli Antiacidi, Schio, Italy. The U.S. representative is Stellamcor, Inc., 60 E. 42nd St., New York 17, N. Y.

A closed coil is used for heating dye liquor, and a perforated false bottom insures even distribution of dye liquor. A reversible circulating impeller beneath the false bottom moves the dye liquor in time-controlled cycles. The yarn carrier is designed to take hanks of various sizes. All surfaces that come in contact with processing liquor are made of 316 AISI stainless steel.

Circle T-7 on Reader-Service Card

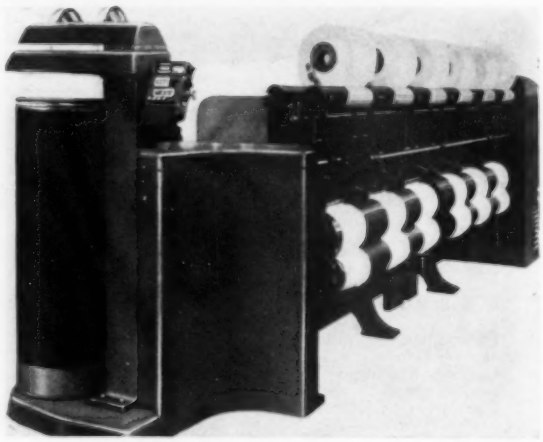
Cotton Comber

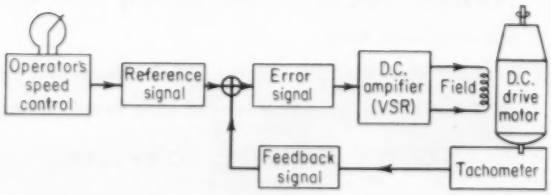
An improved cotton comber based on the principles of the Nasmith machine has been announced by Platt Bros. (Sales) Ltd., Oldham, England.

The comber, which produces up to 44 lbs. per hr. at 116 nips per minute, has six heads and handles 480- to 960-grain laps. Sliver weighs 40 to 60 grains per yard, and waste extraction ranges from 6 to 25%.

All nippers and top combs can be adjusted simultaneously by a master setting. Sliver is single coiled or bicoiled into 9- to 14-in. cans.

Circle T-8 on Reader-Service Card





Process-Machine Control

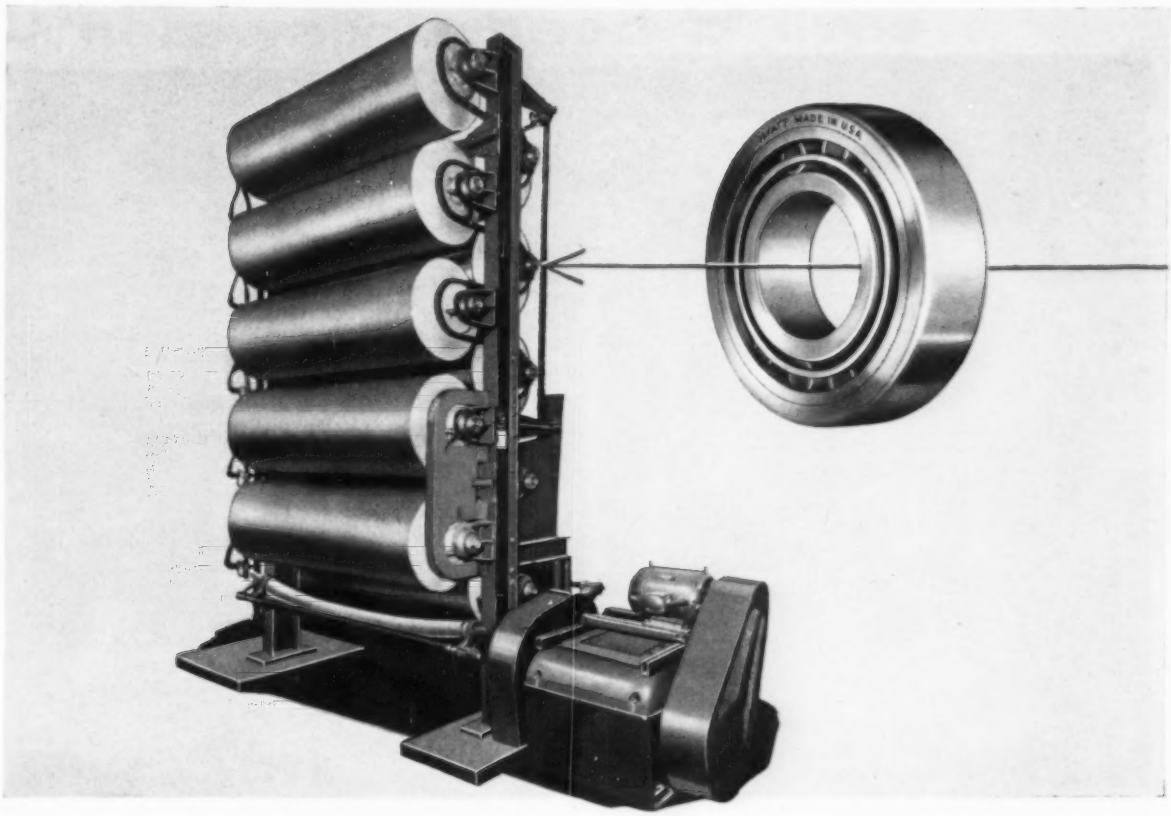
An electronic-regulator unit that provides precise regulation of line speed, voltage, and tension for all continuous-process machines has been developed by Reliance Electric & Engineering Co., 24,701 Euclid Ave., Cleveland 17, Ohio.

The regulator regulates the speed of a d.c. motor with a feedback system in which a signal is transferred back from the load by a tachometer matched against a predetermined reference signal, as shown in the accompanying sketch.

The reference signal, in the instance of speed regulation, is an accurate voltage proportional to the setting of the operator's speed control. Any resultant error or differential between the feedback and reference signals is then automatically and instantaneously corrected.

Circle T-9 on Reader-Service Card

How HYATTS help produce better textiles at lower costs:



FINISHING

HY-ROLL EQUIPPED FINISHING MACHINES ARE MORE DEPENDABLE . . . AND CLEANER

At the final stages in textile processing, where an oil stain can lose a profitable "first," HYATTS are the best insurance you can have! For finishing machines, HYATT sealed bearing housings are designed to *retain lubricant under all conditions*. Engineered to meet heat, humidity and high stress loads found in finishing equipment, Hy-Rolls save up to 40% on power—up to 90% on lubrication—and require practically no maintenance. For assurance of cleaner finishing equipment and higher operating efficiency throughout your mill, you'll do best by standardizing on HYATT Roller Bearings. Specify HYATTS when you modernize or replace any textile machinery—it pays! Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

1908–1958
GM
FORWARD FROM FIFTY

STANDARDIZE ON HYATTS FOR:

CARDS • DRAWING AND ROVING FRAMES • SPINNING FRAMES
LOOMS • DRY CANS • TENTER FRAMES • SHEARS • WASHERS
FULLING MILLS • TEXTILE MACHINERY MOTORS

THE RECOGNIZED LEADER IN CYLINDRICAL BEARINGS

HYATT HY-ROLL BEARINGS FOR TEXTILE INDUSTRY

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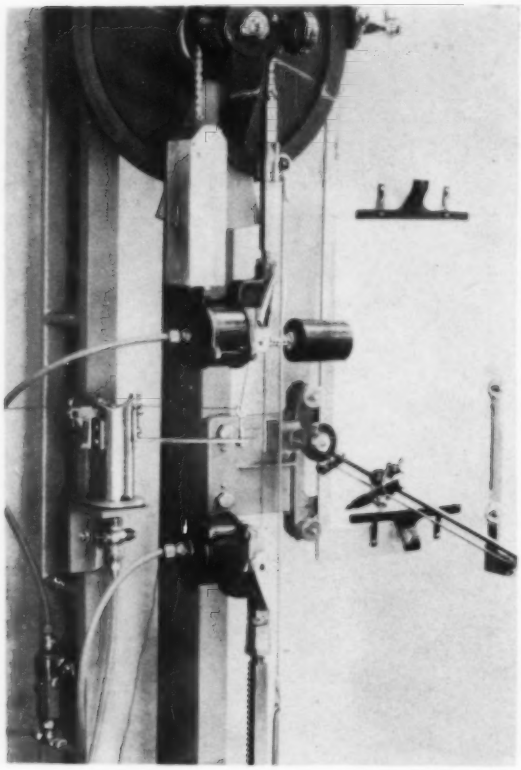


Tire-Cord Clamps

Spruance semiautomatic tire-cord clamps are now available for X-3 tensile testers from Scott Testers, Inc., 95 Blackstone St., Providence, R. I. These clamps assure consistent test values regardless of the human variations of different operators.

The clamps mechanize the critical steps of the test procedure. The automatic adjustment of clamps compensates for varying cord diameters and assures uniform pressure with no crushing, slippage, or disturbance of twist. Automatic pretension and automatic clearance of broken ends are provided.

Standard X-3 testers may be ordered with the clamps, or existing testers may be equipped with the clamps.

Circle T-10 on Reader-Service Card

Mechanical Cotton Blender

A mechanical cotton blender announced by Custom Scientific Instruments, Inc., 541 Devon St., Kearny, N. J., effectively blends cotton samples 20 times faster than by hand.

The principal feature is an adjustable feed plate in combination with a fluted feed roll that feeds a sample into a rotary blending cylinder. Blending or carding of dyed samples for color comparison is another use for the unit.

Circle T-11 on Reader-Service Card

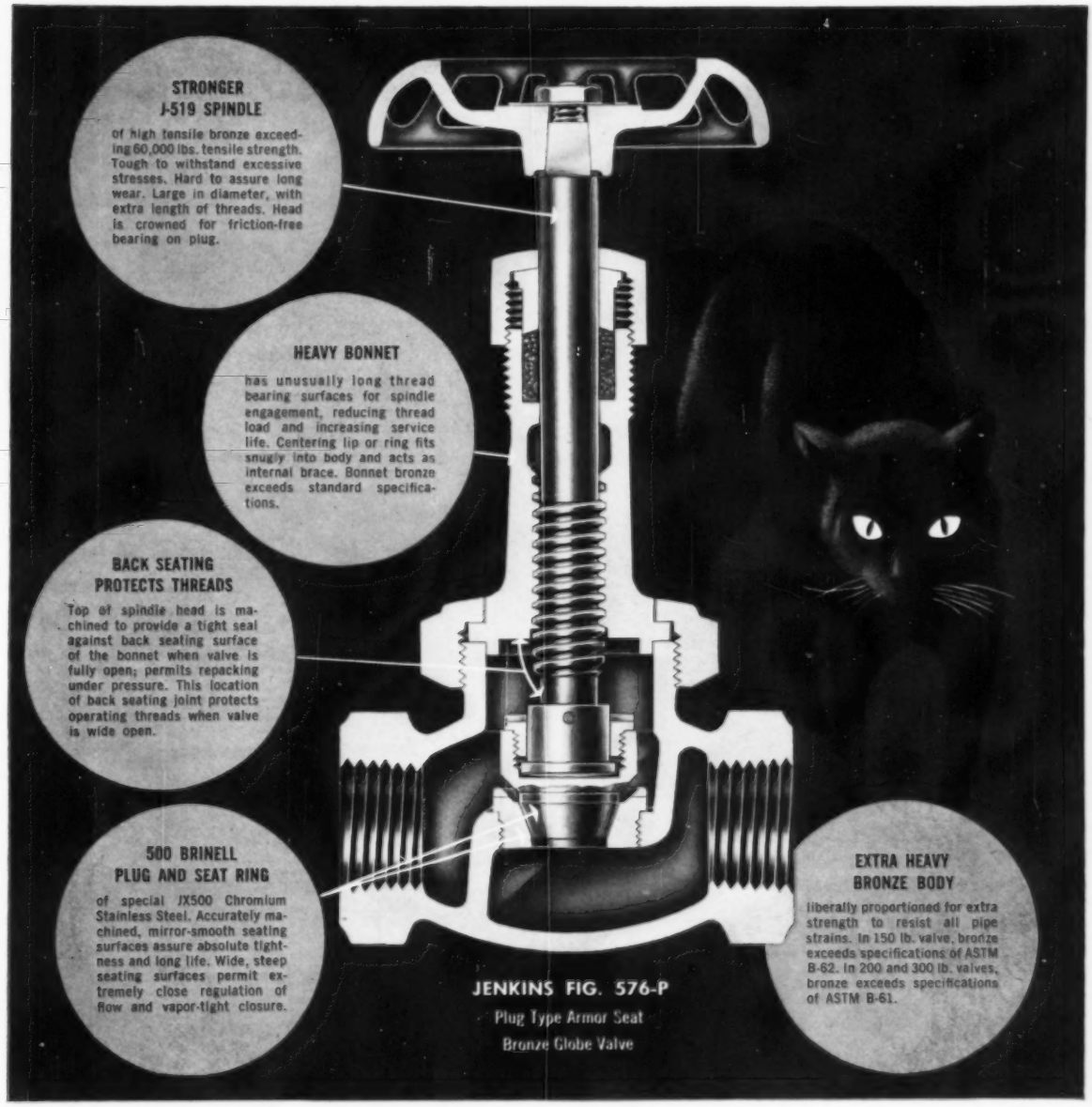
Humidity Instrument

A variable-range humidity recorder-controller with an accuracy of +3% is available from Serdex, Inc., 12 Bowdoin Square, Boston 14, Mass. Operating range is from 15 to 95% r.h. at temperatures from 32 to 130° F.

Recorded humidity indications and control-limit lines are read through a window. The unit operates from 115-v., 60-cycle, a.c.

Circle T-12 on Reader-Service Card

Where valves need 9 lives...


STRONGER
J-519 SPINDLE
of high tensile bronze exceeding 60,000 lbs. tensile strength. Tough to withstand excessive stresses. Hard to assure long wear. Large in diameter, with extra length of threads. Head is crowned for friction-free bearing on plug.
HEAVY BONNET
has unusually long thread bearing surfaces for spindle engagement, reducing thread load and increasing service life. Centering lip or ring fits snugly into body and acts as internal brace. Bonnet bronze exceeds standard specifications.
BACK SEATING
PROTECTS THREADS
Top of spindle head is machined to provide a tight seal against back seating surface of the bonnet when valve is fully open; permits repacking under pressure. This location of back seating joint protects operating threads when valve is wide open.
500 BRINELL
PLUG AND SEAT RING
of special JX500 Chromium Stainless Steel. Accurately machined, mirror-smooth seating surfaces assure absolute tightness and long life. Wide, steep seating surfaces permit extremely close regulation of flow and vapor-tight closure.
EXTRA HEAVY
BRONZE BODY
liberally proportioned for extra strength to resist all pipe strains. In 150 lb. valve, bronze exceeds specifications of ASTM B-62. In 200 and 300 lb. valves, bronze exceeds specifications of ASTM B-61.
JENKINS FIG. 576-P
Plug Type Armor Seat
Bronze Globe Valve

Install this JENKINS...made to defeat valve-killers

HERE are just five of the eighteen ways by which Jenkins Plug Type Valves have been engineered for maximum wear in valve-killing services. For any close-control steam service like drains, bypass lines, drips, blowoff, throttling, bleeders . . .

Or where abrasion, entrapped pipe chips, scale or rust tubercles are a problem . . .

You'll cut maintenance and replacement costs by specifying *"Jenkins Plug Type, with the 500 Brinell Stainless Steel Armor Seat"*. In the Jenkins Catalog are 150 lb., 200 lb. and 300 lb., Globe and Angle, screwed or flanged end valves in a full range of sizes. And, they are available quickly from local distributors' stocks.

WRITE us, or ask your Jenkins distributor for descriptive folder No. 202-A. Jenkins Bros., 100 Park Avenue, New York 17.

JENKINS
LOOK FOR THE JENKINS DIAMOND
VALVES
SINCE 1864 TRADE JENKINS MARK
Jenkins Bros.

Sold Through Plumbing-Heating and Industrial Distributors

For more data, write this page number on Reader-Service card. →

Sewing-Machine Tables

Synchro tables, announced by Singer Sewing Machine Co., 149 Broadway, New York 6, N. Y., feature innovations that help cut the work-handling time of operators. The top surfaces and all four edges are completely bonded with Formica.

The front edge of the table is slanted for more convenient work feeding and easier view of the 36-in. measuring rule sealed in the front band. Top surfaces are unmarred by through-the-table fastening devices.

The stands and driving equipment are secured to the table underside by steel anchor nuts, which are threaded and locked in the wood. The tables are equipped with large, high-strength plastic drawers within handy reach of operators. Two finishes, light wood grain and green linen, are available.

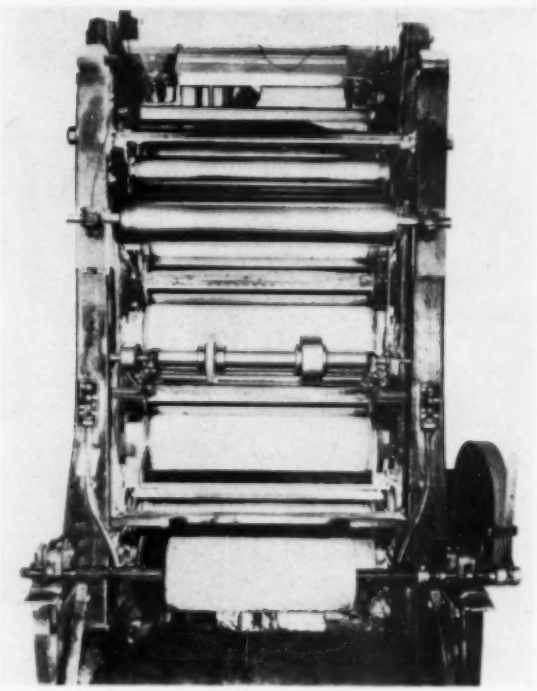
Circle T-13 on Reader-Service Card

Roll Grinder

A portable traverse roll grinder that can be used to redress rolls without removing them from their regular position has been developed by B. S. Roy & Son Co., 801 Southbridge St., Worcester, Mass.

Rubber, felt, rigid-plastics, thermoset-plastics, nonferrous-alloy, cast-iron, and steel rolls can be dressed with the grinder. Rolls in any diameter and in lengths up to 100 ins. can be handled. A variable-speed motor permits one-man operation.

Circle T-14 on Reader-Service Card



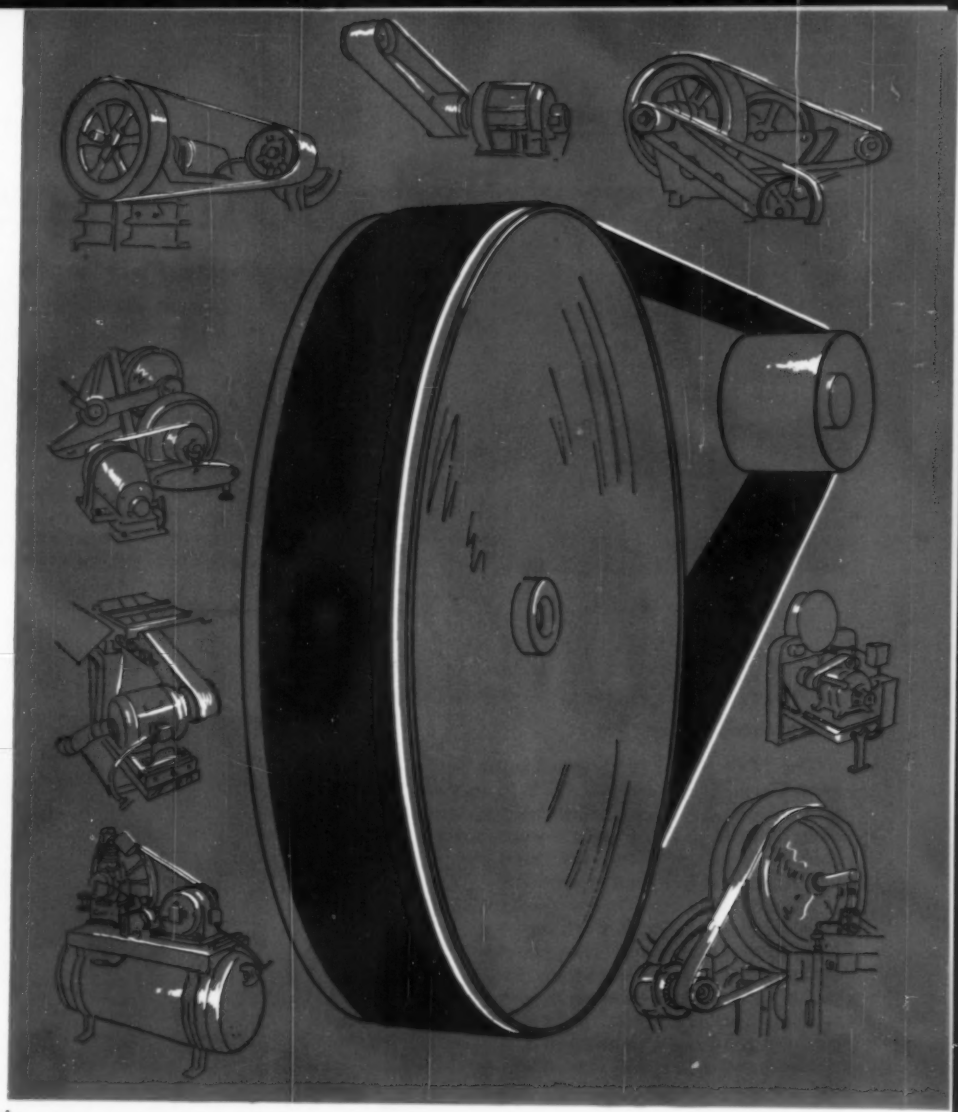
Hosiery-Clipping Machine

An improved automatic thread-clipping machine made by Somerset Knitting, Inc., Plessisville, Que., has a 24-in. cutting head, which has replaced the individual powered clippers that were on the original model. The new clipping head has eight 3-in. blades, each with its own tension device, so that more or less tension may be used as needed. The head is driven from a ½-hp. motor.

An automatic turning device has been added to remove the hosiery from the forms after they have been clipped. The table does not have to be removed from its base to replace the belts that drive the table. By removing several bolts, the undercarriage of the machine drops so that belts can be replaced easily.

The new turning device needs only one operator if the socks are not inspected on the machine. One operator can process 500 doz. pairs of hosiery in one 8-hr. shift.

Circle T-15 on Reader-Service Card



At Rhoads, the Job Selects the Belt

In the Rhoads' family of beltings, there is a flat belt that is exactly right for your operating conditions.

It may be Tanastic, new leather/plastic belting with a stretch-free nylon core.

It may be Texalon, new all-synthetic belting of fabric and nylon . . elastic and almost 100% stretch-free.

It may be Tannate leather belting, the product of more than 250 years of tanning experience.

Rhoads' Engineers Consider All of the Factors Involved

The advantages of the flat belt drive — economy in original cost and in operation; highly efficient speed reduction; shock absorption; high degree of safety; flexibility in placement of motor — all these advantages and many others are used by Rhoads' engineers.

Based on the job the belting is to do, and the operating conditions involved, Rhoads recommends the belting that is engineered to your needs.

Tanastic

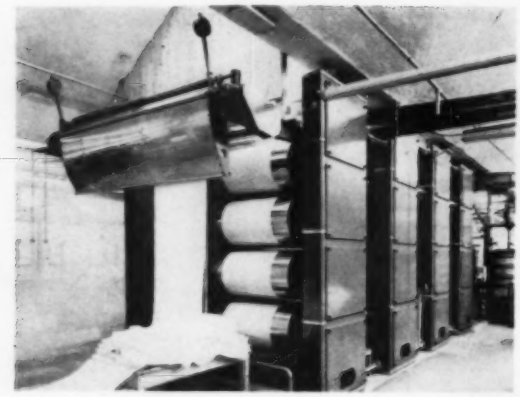
leather/plastic belt . . . no unscheduled shutdowns

In Rhoads' Tanastic you get the ideal combination of strength and elasticity — the ability to absorb shock loads and transmit full power uniformly, smoothly and efficiently — with no unscheduled shutdowns for tension adjustments. On cone drives the narrower Tanastic belt (usually one-third the width of previous belts) permits faster driven speeds and a wider variety of speed changes.

Tanastic can be used effectively on a wide range of belt applications . . replacing present leather, rubber or V-belts and easily designed for new installations. Let us quote Tanastic for a specific drive or write for new bulletin. Address Engineering Department, J. E. Rhoads & Sons, Wilmington 99, Delaware.

RHOADS

Since 1702 . . . Pioneers in Mechanical Power Transmission



Drying Machine

A drying machine that has been designed to eliminate stretch of the cloth during drying has been announced by Tattersall & Holdsworth's, Oldenzaalsestraat 32, Enschede, Holland.

Each of the stainless-steel cylinders is driven individually, and any desired tension on the fabric can be preset. A syphon pipe removes condensate from the cylinders.

Push-button controls at both ends of the machine are an aid to the operator. Electronic moisture control can be applied if desired.

The dryer is especially suitable for cloth made of man-made fibers and for delicate fabrics.

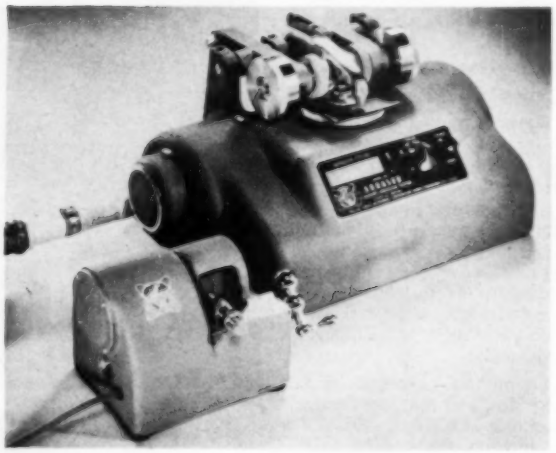
Circle T-16 on Reader-Service Card

Abrasion-Testing Set

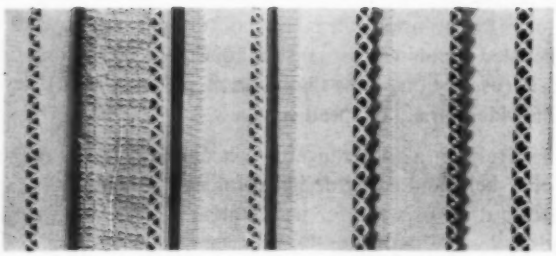
The 1958 abrasion-testing set made by Tabor Instrument Corp., N. Tonawanda, N. Y., consists of the laboratory abrader and wheel refacer with accessories and supplies. A built-in motor with a worm reduction drive for uniform high torque and automatic stop counter and a new selector circuit are incorporated.

The selector circuit insures that each abrasion cycle is counted exactly regardless of the stops and starts made to inspect the specimen throughout the test. A motor-driven fan forces cool air around the motor and through the interior of the aluminum housing and exhausts it through dual rear ducts. Softening effects on thermoplastic materials are eliminated.

The wheel refacer has been designed to precision dress the abrading wheels. Multiple diamond-point dressing tools have been developed to improve refacing.



Circle T-17 on Reader-Service Card



Circle T-18 on Reader-Service Card

Fagoting Sewing Machines

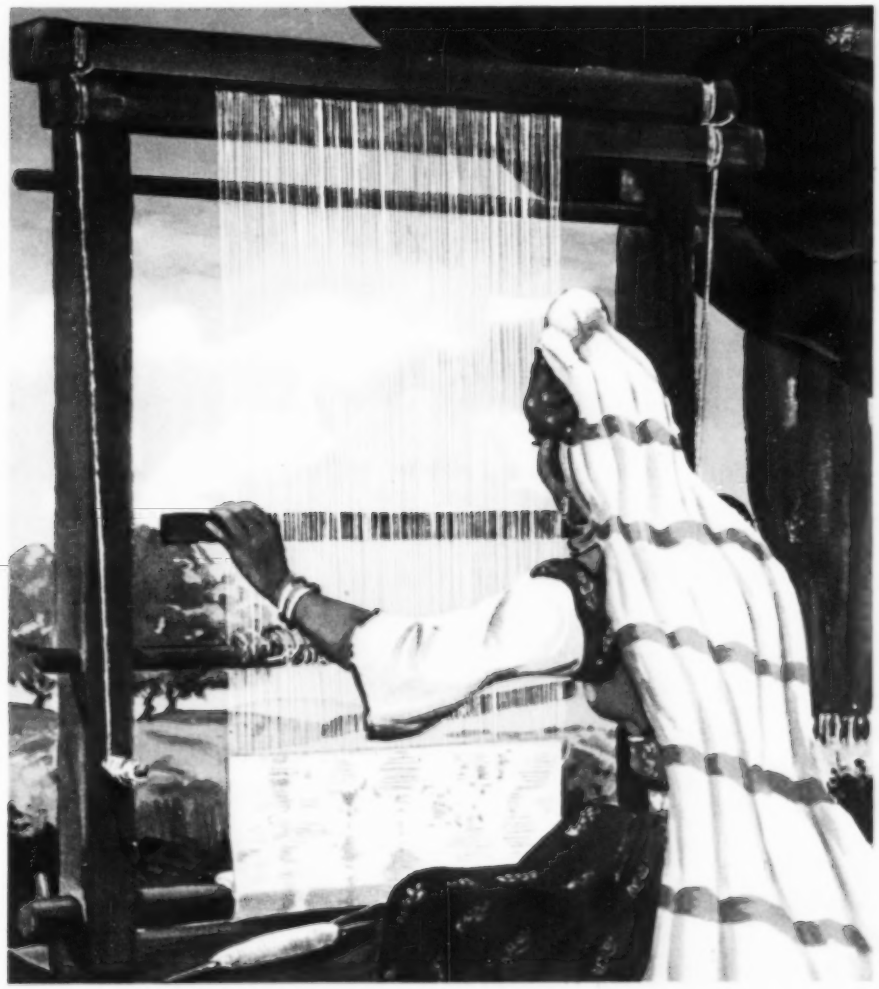
Two sewing machines to produce fagoting or Picoetta finish have been introduced by Union Special Machine Co., 400 N. Franklin St., Chicago 10, Ill. Both finishes simulate handwork and are used on slips, panties, hosiery, children's underwear, towels, and pillowcases.

The single-needle Class 53300 machine makes a Picoetta finish with a series of stitches to the left and the right which in turn are made with two ends of thread to produce a chain that is simultaneously moved forward to produce a scallop. Class 53400 machines produce duplex Picoetta finish from ends of thread drawn directly from cones.

Fagoting is similar to the Picoetta finish except that the stitches unite the finished edges of two pieces of fabric with a space between the edges, such as in joining panel sections of foundation garments and for attaching elastic or lace to panties, slips, and other garments.

Staley's presents:

Weavers Through The Ages



Spain . . . 9th and 10th Centuries

In the late Middle Ages, the Moors, after the conquest of Spain, cultivated cotton and, along with plainer fabrics, wove the first dimities and fustians.

The Moorish Caliphs of Spain brought to Europe more than their religion and culture. For, tradition has it, in the early 9th Century, a cotton embroidered mantle was presented by Mohammedan rulers to Charlemagne of France. By the middle of the 10th Century, cotton cultivation had risen to a high point under the Eastern traditions of craftsmanship that had yet to find their way into France, Germany and England. The treasures that the Moors created from the cotton plant of Spain remain today as delicate examples of early textile art.

This heritage of craftsmanship has remained among the world's weavers. Today, modern electronic magic controls quality as did the sharp eyes of master weavers in the past. But the principle is the same, the art is no less an art. Through the sizing, printing and finishing functions of a modern textile mill, new processes yield finer results than the ancients ever thought possible. Staley's products for the textile industry—quality starches, gums and dextrins—have played an important part in the profitable yield.

For the textiles of tomorrow, as well as those of today, you can depend on the research and production facilities of the Staley Company to furnish the products you need when you need them. The challenge of the future calls for intensified work on the part of us all. We are glad to serve with you in answering that challenge.

Staley's

A. E. Staley Mfg. Co., Decatur, Illinois

Branch Offices: Atlanta · Boston · Chicago · Cleveland · Kansas City
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CARPETS, THROW RUGS, CHILDREN'S WEAR, BLANKETS, SEPARATES AND DRESSES, COATS, SHIRTS, ROBES, SLACKS AND SPORTS COATS, ON-THE-JOB CLOTHES...WHATEVER THE END USE...

IT'S BETTER WITH ACRILAN®

From Mill to Mrs., the steady flow all along the distribution pipeline obviously depends on acceptance of the end product.

Toward such acceptance, Acrilan is currently making fiber history . . . being responsible, among other successes, for a wash & wear jersey that has revived a tremendous new fashion interest in this fabric . . . for a blanket whose luxury and machine-washability has made it the best seller in its field . . . for a new kind of carpet with a resilience never before achieved.

Similarly, to all the products headlined above, Acrilan, the acrylic fiber by Chemstrand, has added performance values that have given quick, widespread consumer acceptance. On the record, the case for Acrilan in your mill is a mighty strong one.

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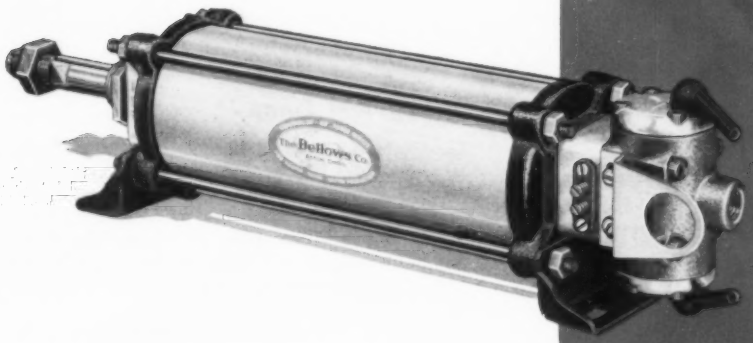
Canadian Agency: Fawcett & Co., 34 High Park Blvd., Toronto, Canada • PLANTS: ACRILAN® ACRYLIC FIBER—Decatur, Ala.; CHEMSTRAND® NYLON—Pensacola, Fla.

the ultimate in air cylinder power-



BUILT-IN ELECTRICALLY-CONTROLLED DIRECTIONAL VALVE

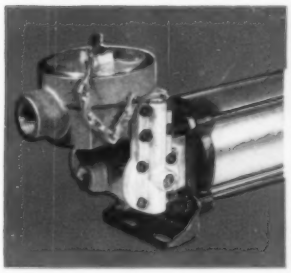
BUILT-IN DUAL SPEED CONTROLS

REQUIRES ONLY A SINGLE AIR CONNECTION

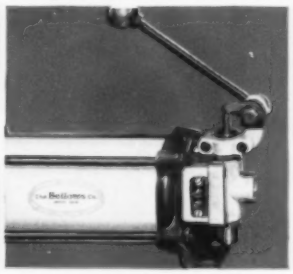
THE BELLOWS AIR MOTOR

The Bellows Air Motor is a complete air cylinder power unit, with directional valve and speed controls built-in. Takes less than half the space and costs less installed than a conventional air cylinder set-up of equal power with its separate valving and piping. The single air connection, which can be made with flexible hose, makes it ideal for use on moving machine elements. It is a sturdy unit with forged steel heads, heavy brass cylinder, stainless steel piston rod. The piston rod is threaded, equipped with a wrench flat and nut. Many Bellows Air Motors have been operating day in and day out for fifteen years with negligible maintenance. And if service needs do arise, there is a Bellows Field engineer as near as your phone. The Bellows Air Motor shown above is a 2½" bore unit equipped with the Bellows Low-Voltage (8-12V) Electroaire Valve. Other bores available are 1¼", 1¾", 3⅝" and 4½". Any stroke length. Optional choice of built-in valves as shown below.

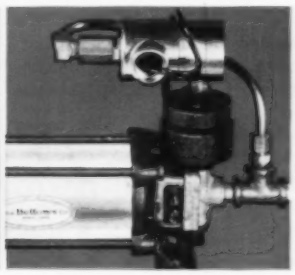
CHOICE OF BUILT-IN VALVES



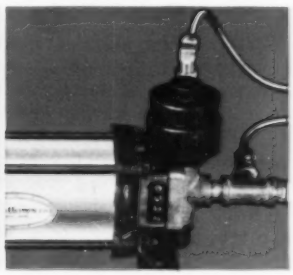
115 V. ELECTROAIRE VALVE
For J.I.C. applications where a 115 v. momentary contact is desirable.



MECHANICAL VALVE
For manual operation or for use with cams or direct linkage.



115 V. MAINTAINED CONTACT
Valve remains in shifted position during period current is applied.



AIR-OPERATED
For use in applications calling for full pneumatic control.

Write for these two booklets

Fifty pages of data to help you select the right Air Motor-Valve combination for your job. Address Dept. TW 458, The Bellows Co., Akron 9, Ohio. In Canada: Bellows Pneumatic Devices of Canada, Ltd., Toronto 18. Ask for Bulletins BM-25 and SP-55.

The Bellows Co.

DIVISION INTERNATIONAL BASIC ECONOMY CORPORATION

AKRON 9, OHIO

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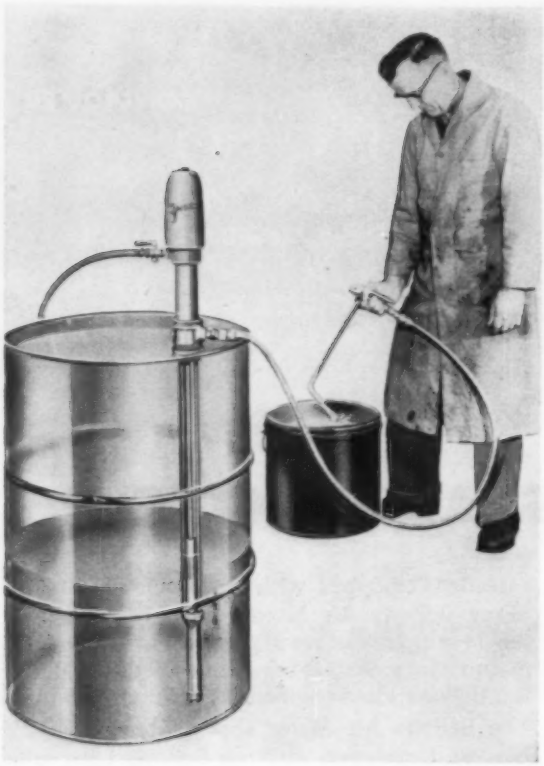


Air-Powered Fluid Pump

Liquid dyes, resins, caustic liquors, latex emulsions, liquid starch, and inks can be pumped direct from original shipping drums with a lightweight air-powered stainless-steel pump being manufactured by Gray Co., Inc., 1007 Sibley St., N.E., Minneapolis 13, Minn. The fluids are pumped from the 2-in. end bungs of the drums to the point of use with assurance that fluids will not be contaminated.

The stainless-steel lower assembly is quickly and easily removed without tools from the power head for complete cleaning. Therefore protection is given against off-colors in dyeing from previous dyes.

The air-operated power head prevents danger of sparking. One man operates the pump, and delivery is controlled by merely opening or closing a valve at the hose outlet.

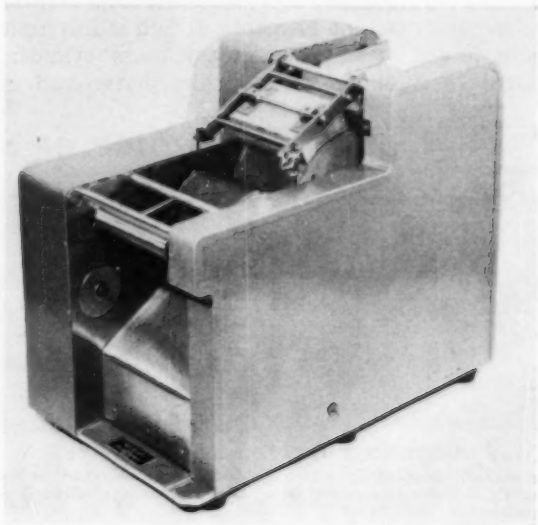
Circle T-19 on Reader-Service Card

Nep-Test Machine

A nep-test machine announced by Custom Scientific Instruments, Inc., 541 Devon St., Kearny, N. J., provides a rapid and satisfactory method of preparing specimens of raw cotton for nep evaluation.

The design of the machine incorporates the principal mechanical assemblies of textile carding machines to simulate commercial production methods.

Circle T-20 on Reader-Service Card



Adjustable-Speed Drive

An adjustable-speed drive, Select-A-Spede, for slashers and range drives has been announced by Louis Allis Co., 427 E. Stewart St., Milwaukee 1, Wis. The unit is available in ratings from 5 to 200 hp.

Synchronous performance with squirrel-cage motors is possible with the drive.

The system maintains full synchronous speed from no load to full load and during intermittent overloads within its rating. Four distinct speed ranges are possible: (1) the high-frequency range above 60 cycles, (2) standard-line 60-cycle speeds, (3) low-frequency range from 60 cycles down to 5 cycles, and (4) lower-output speeds.

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THIS LABEL is your assurance of quality in vulcanized fibre containers for textile materials handling . . .

A tough, smooth, lightweight material, Spaulding Vulcanized Fibre has long been the choice for roving cans, trucks and boxes in American textile mills.

Buyers know Spaulding Vulcanized Fibre can't corrode or splinter — won't damage delicate fibres. They buy Spaulding for extra years of service under roughest use. You can count on Spaulding's advanced techniques and superior material for the best in materials handling equipment.

For more information on these products in standard types and sizes, or fabricated to your particular requirements, write for the Spaulding Materials Handling catalog.

SPAULDING FIBRE COMPANY, INC., DOVER, NEW HAMPSHIRE

28 Branches in Principal Cities

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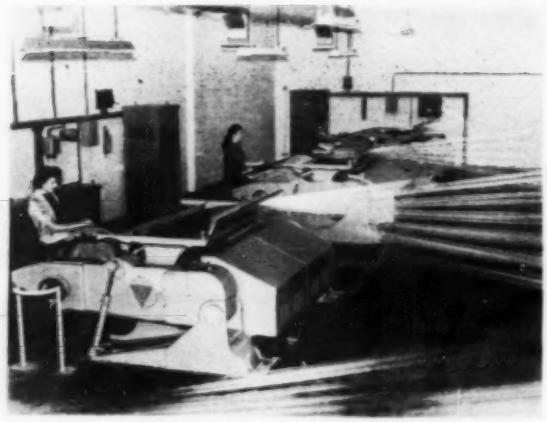


Beaming Headstock

Beaming headstocks for warping are being made by Crowther Ltd., Leicester, England. The minimum width between flanges is 54 ins., and maximum width is 84 ins. Maximum beam diameter is 36 ins.

Speed is variable up to 850 yds. per min., and any pre-selected speed to within ±1% can be maintained. The braking system will stop a beam weighing 2 tons revolving at 850 yds. per min. in 1½ revolutions of the beam.

Circle T-22 on Reader-Service Card

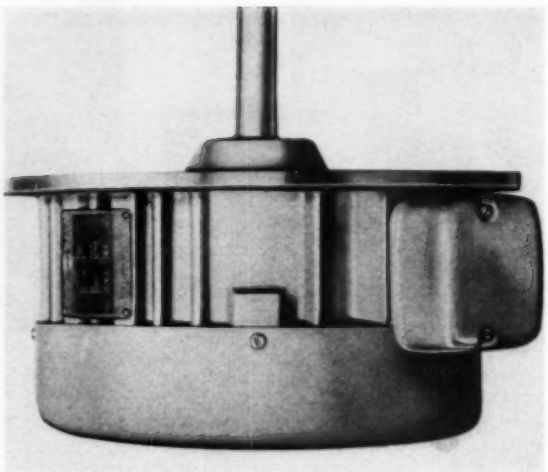
Pancake-Type Motor

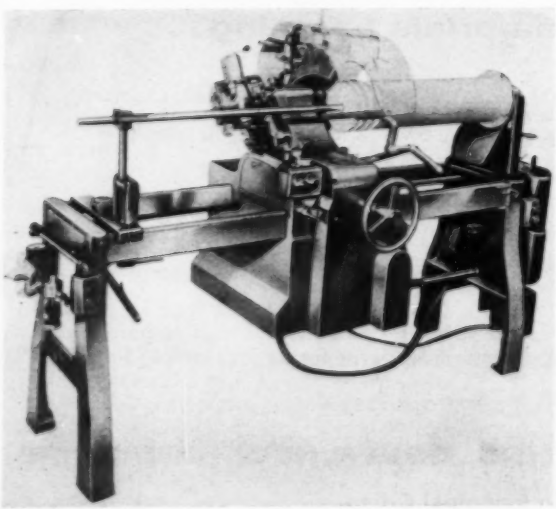
A pancake-type motor that reduces motor length up to 60% has been announced by Louis Allis Co., 427 E. Stewart St., Milwaukee, Wis. The short length is achieved without any reduction in motor performance.

For normal operating conditions, the motor is built in an open dripproof enclosure. Where dirt, filings, corrosive chemicals, coolants, or other contaminants are present, it is furnished in an enclosed construction.

The motor is available in ratings from 1 to 15 hp. at 1,800, 1,200, and 900 rpm. Additional features are vertical or horizontal mounting, cast-iron housing-bearing bracket, and factory-lubricated bearings.

Circle T-23 on Reader-Service Card





Single-Knife Slitter

A fully automatic single-knife slitter has been announced by Lever Bias Machine Corp., 120 W. 31st St., New York, N. Y.

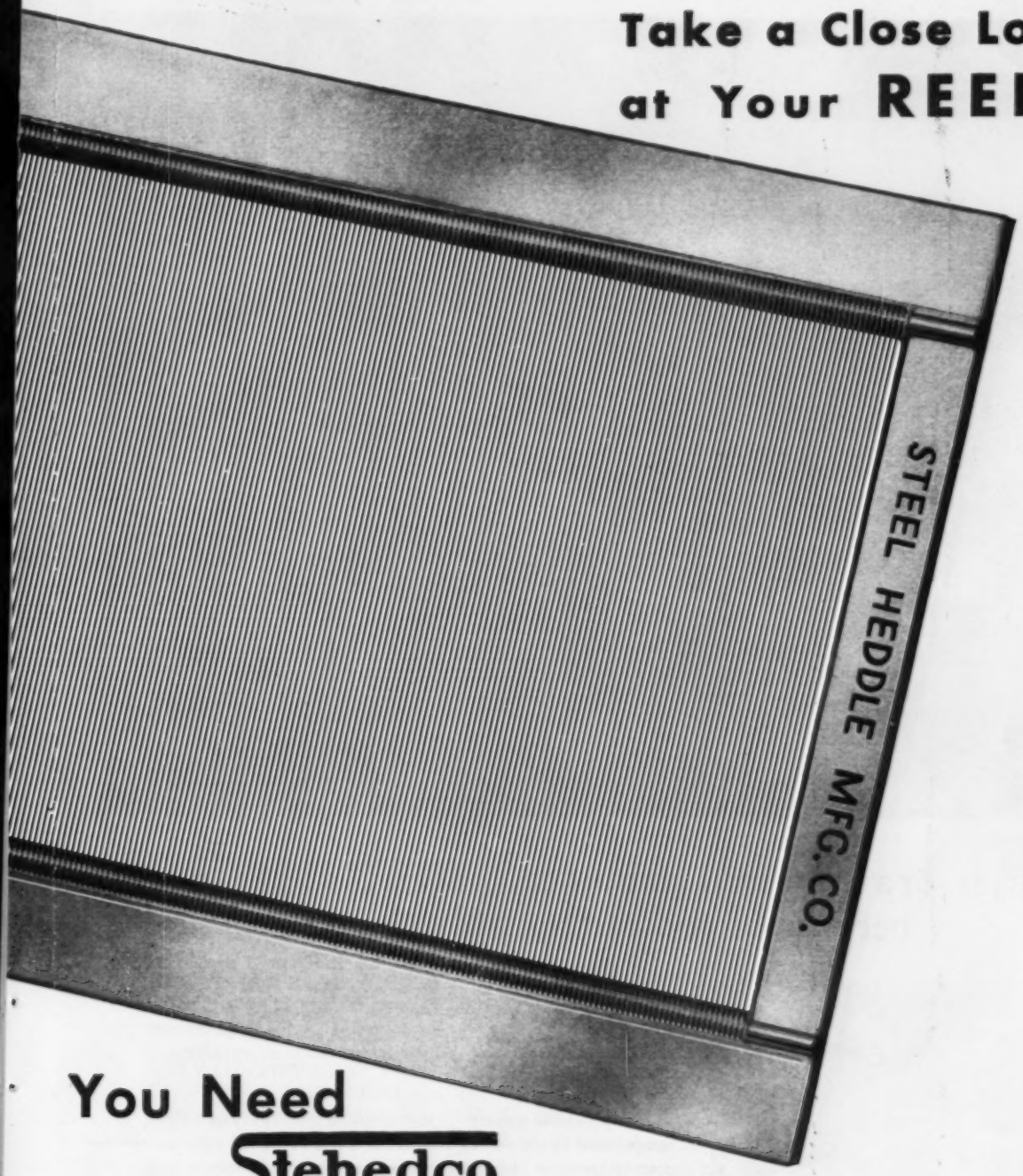
The machine, which eliminates the need for highly skilled operators, is controlled hydraulically and electronically. Once set, the machine is put into operation by pushing a button; and it will slit fabric rolls to any desired width.

When the predetermined yardage has been slit, the machine stops automatically. As a result, one operator can supervise the production of several machines. It has safety features that eliminate many of the hazards found on manually operated slitting machines.

Circle T-24 on Reader-Service Card

CONTINUED ON PAGE 176

Take a Close Look at Your REEDS



You Need Stehedco Quality

You need Stehedco Quality Reeds to weave quality cloth with greatest economy. Constructed of finest quality materials by master craftsmen, you can be sure of having reeds that will give you longer trouble-free service and better quality production than ordinary reeds. In addition you get better delivery on any quantity, consistent with their fine quality. Order Stehedco Quality Reeds and be assured of complete satisfaction.

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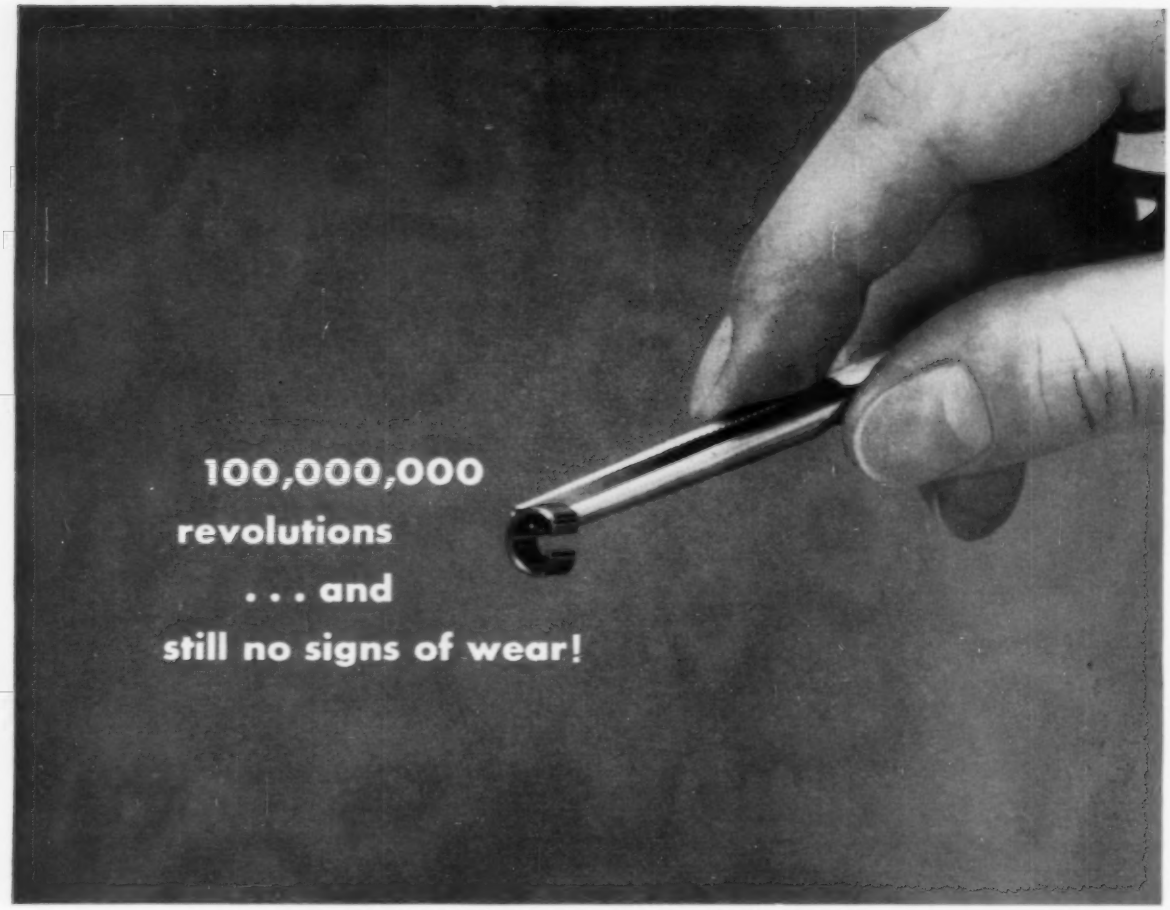
Other Plants and Offices: Granby, Quebec, Canada—Lawrence, Mass.—Greensboro, N. C.—Atlanta, Ga.—Textile Supply Co., Dallas, Texas—Albert R. Breen, Chicago, Ill.



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From raw material to packaging of the finished product—every step of the way—the uniform high quality of CARTER TRAVELERS is scientifically controlled and insured through constant checking by our own large, modern, metallurgical laboratories.

This dependable quality . . . this absolute uniformity of weight, temper and shape . . . of CARTER TRAVELERS cuts your costs in terms of smoother spinning at top spindle speeds with less ends down.

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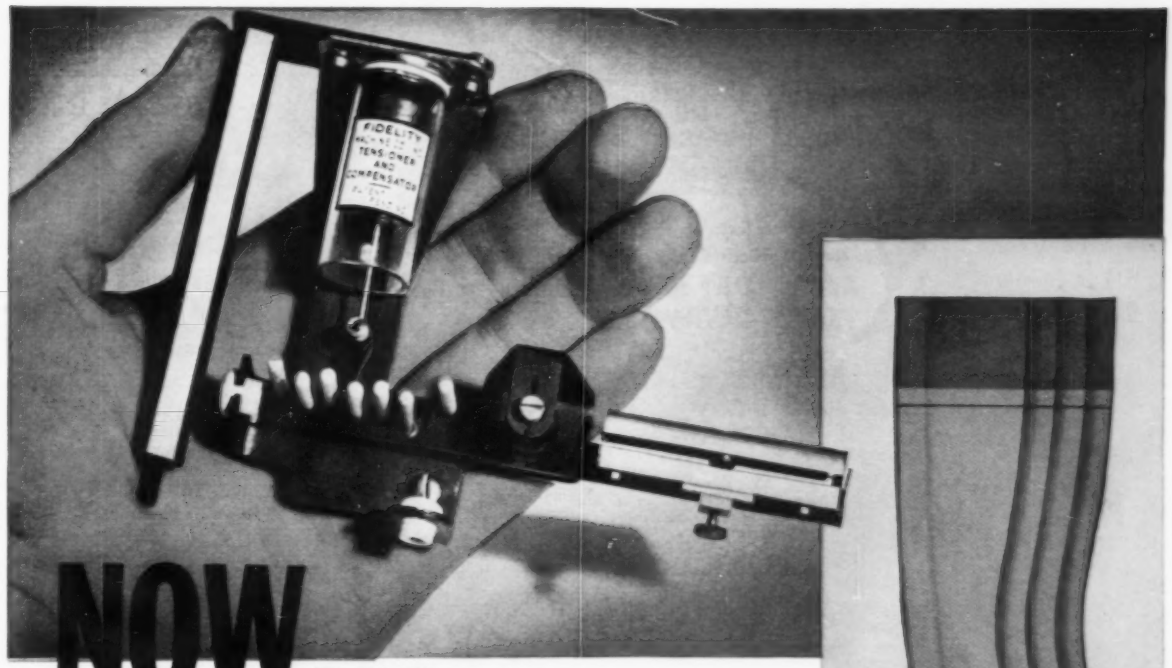

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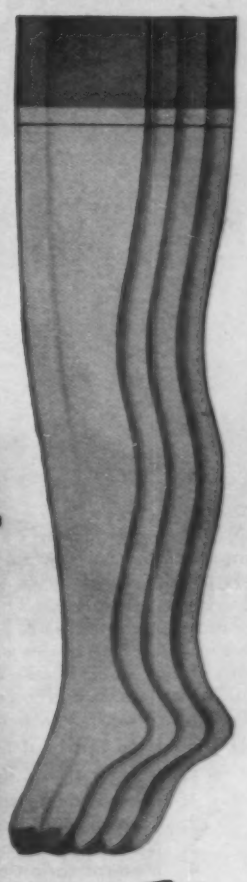

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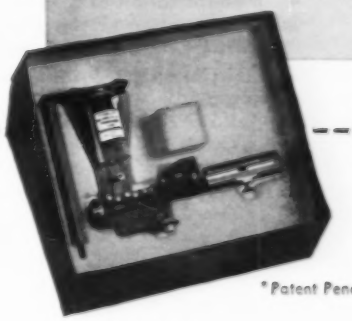

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NEW D&F "FRAME RECORDS" TELL
Improved Spinning Production Story

- Reduced cost per pound
- higher speeds
- more uniform tension
- less downtime
- less doffing

Get the facts on the New D&F Design Features
Ask for "D&F NEWS QUICK REVIEW"

Compare your own spinning room records with conservative figures offered by a typical cross section of progressive mills in a recent Davis & Furber mill survey. The story of *New Design Features and their operation* on the Davis & Furber Model F and G Ring Spinning Frames is one of *flexibility in design and application*. It makes these D&F Models adaptable to individual Mill Management Production Improvement Plans — to stock and blend specifications — to proposed investment budget limitations — to proposed cost-per-pound reduction plans.

Facts have been outlined for you in **the new D&F News Quick Review.**

FIVE PROOFS in this QUICK REVIEW

1. **Present acceptance and use in Mills.**
2. **Comparative production figures.**
3. **New design features.**
4. **Modernization of Existing Frames.**
5. **An invitation to prove this "Improved Production" on your own roping with D&F New Demonstrators.**

Davis & Furber can offer a Production Improvement Plan for *your* mill. That's where the advice and counsel of D&F "Coordinated Production" technicians follows through. To get (a) *published proof* of latest production results, plus (b) *specific proof* (per item 5) tied to your present production results, act at once. Call or write now and let us schedule you for a *Presentation of your future yarn production schedule.*

DAVIS & FURBER
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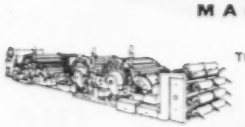

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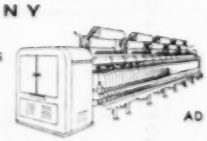

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NEW LITERATURE

TEXTILE MACHINERY & AUXILIARY EQUIPMENT

Finishing machinery — For woolen, worsted, and high-pile fabrics featured in a folder from Turbo Machine Co. (F-1)

Cylinder dryer—For tensionless drying of fabrics described in bulletin from Tattersall & Holdsworth's. (F-2)

Induction motors—Of 150 to 1,250 hp, listed in Bulletin No. 1950 from Louis Allis Co. (F-3)

V-belts—The testing, inspection, and control of their quality is explained in 16-p. Booklet S-51107 issued by Goodyear Tire & Rubber Co. (F-4)

Testing instruments—Catalog No. 58 lists 50 different units from Custom Scientific Instruments, Inc. (F-5)

Variable-speed drive — That has no tubes, no brushes, and no commutation described in Bulletin No. 1257-1 from Fidelity Instrument Corp. (F-6)

Motor frame—Bulletin B-1284-1 gives NEMA frame assignments and over-all dimensions of Reliance a.c. motors. Reliance Electric & Engineering Co. (F-7)

Ultrasonic cleaner—Data sheet gives specifications. From Norda Ultrasonics Corp. (F-8)

Lubrication equipment and accessories—Listed and described in Catalog 92 from Lincoln Engineering Co. (F-9)

Motors—With many advantages of totally enclosed motors described in folder from Lincoln Electric Co. (F-10)

Testing instruments—For paper, cloth, felt, thin metal, and plastics described in Bulletin 1400 from W. & L. E. Gurley. (F-11)

Doubling machine—For tire cord described in circular from Orundel, Coulthard & Co. Ltd. (F-12)

CHEMICALS & SUPPLIES

Textile chemicals—A 28-p. book published by Union Carbide Chemicals Co. (F-13)

Fastenings — Corrosion-resistant nuts, bolts, screws, washers, and rivets listed in catalog from H. M. Harper Co. (F-14)

Safety products—Listed in folder from

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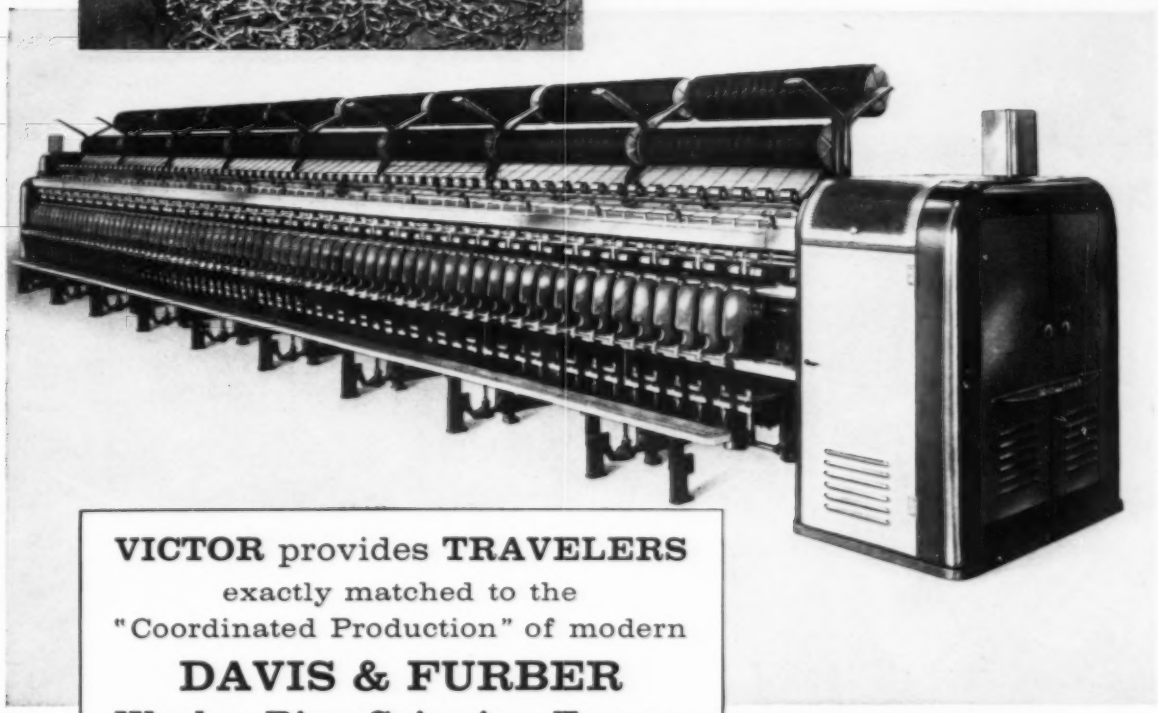
every development
in spinning progress



VICTOR provides **TRAVELERS**
exactly matched to the
"Coordinated Production" of modern
DAVIS & FURBER
Woolen Ring Spinning Frames

Davis & Furber can readily demonstrate the advantages of "coordinated production" — *increased output of higher quality yarns.* As a further assurance of maximum benefits, Victor specialists have cooperated fully in developing travelers exactly matched to the production potential of the frames.

These Victor vertical travelers, in the various types and sizes required, meet the most severe performance demands in running wool or blended stocks of every grade and variety. Their proved efficiency makes them first choice for operating economy.

As leading traveler specialists, Victor regularly cooperates with all manufacturers, devoting its experience and abilities to the success of any significant development in spinning and twisting machinery design. This "association in progress" is another important reason why Victor is specially qualified to recommend and supply the travelers best suited to your operations, whether you are running natural fibers, synthetics, or blends. For prompt service, contact the nearest Victor office.

VICTOR
Ring
Travelers

VICTOR RING TRAVELER DIVISION
OF SACO-LOWELL SHOPS

PROVIDENCE, R.I. . . . 1 Sabin Street . . . . . Tel. DExter 1-0737
GASTONIA, N.C. . . . . . 914-916 East Franklin Ave. . . . Tel. UNiv. 4-3221

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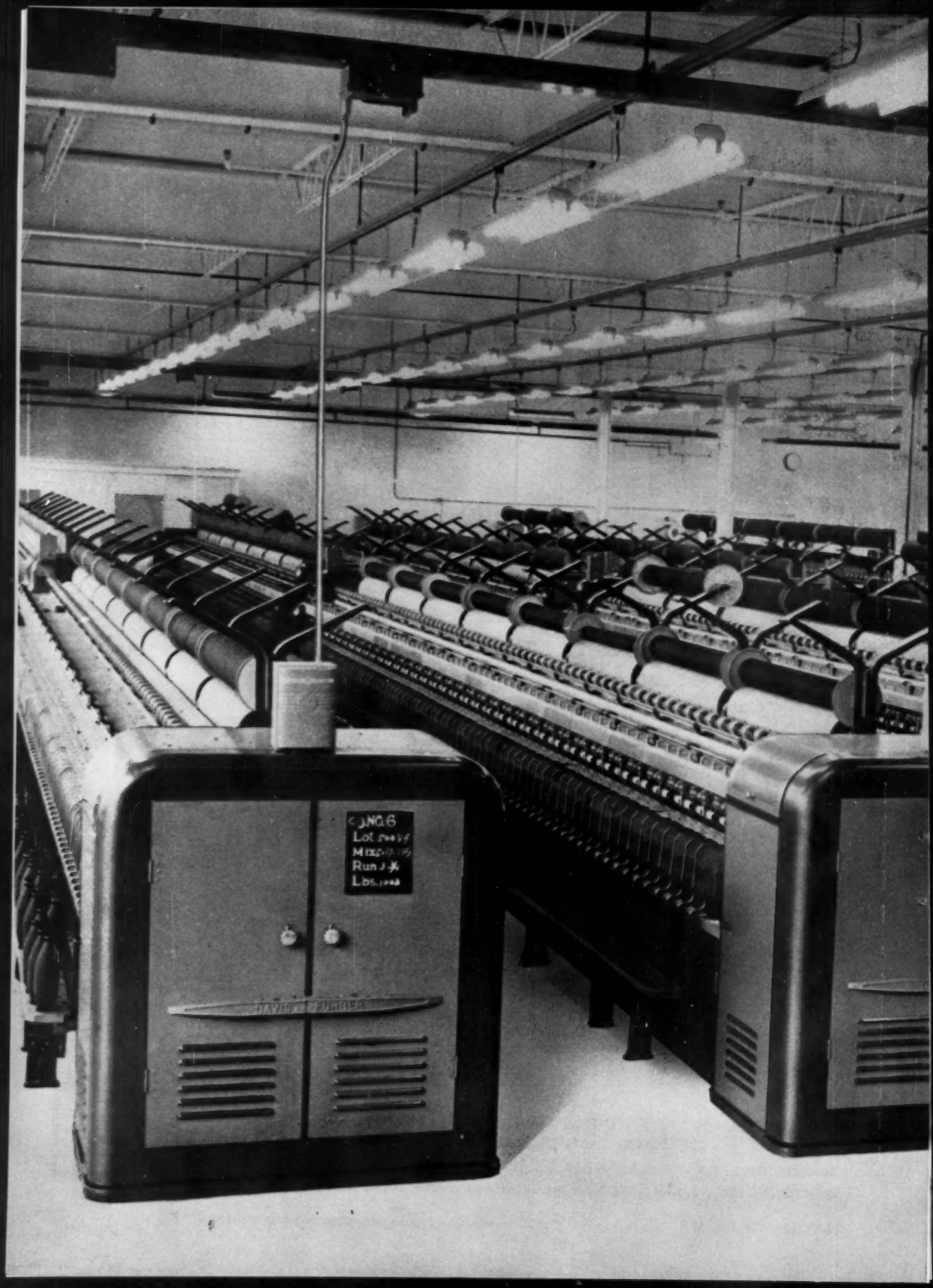
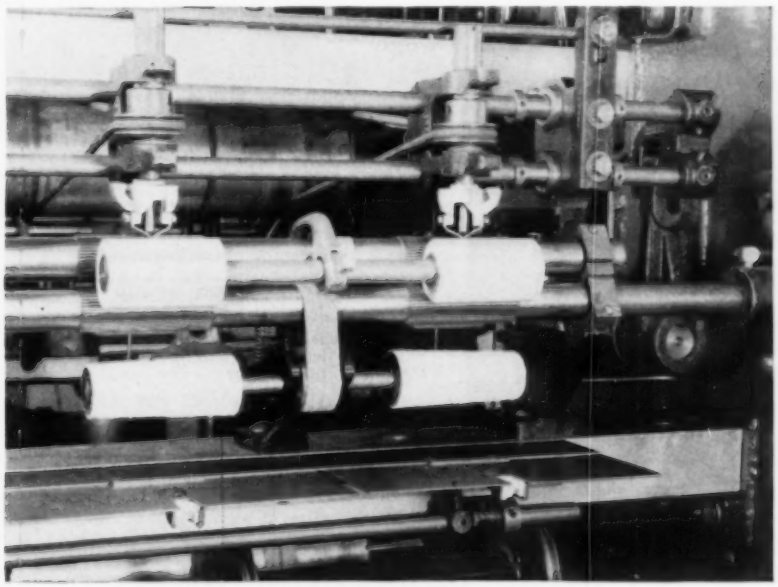

NO. 6
DAVIS-STANDARD

Davis and Furber Specifies Dayco Cots

for its new Simplex Woolen Ring Spinning Frames

HERE'S WHY Davis and Furber specifies Dayco Cots on its new line of Model F Simplex Woolen Ring Spinning Frames. As a spokesman for the Company puts it, "Dayco roll coverings, with their uniformly high coefficient of friction, help to maintain uniform tension. Their smooth, even drawing action doesn't vary even when lumps of foreign matter are imbedded in the roping. Keeping our 125-year-old reputation for performance and quality in mind, we ship our Spinning frame equipped with Dayco rolls."

DAYCO COTS for the woolen industry are a special blend of natural and synthetic rubbers, selected for their resistance to wear, weather, oils and static. Maintaining the same coefficient of friction throughout their long life, Dayco Cots will not groove or become slick. Neither are they affected by extremes of temperature or humidity, nor by oils found in natural fibers. Equally suited to wool, synthetics, or blends of fibers, Dayco Cots resist lint build-up . . . thereby requiring less time for care and tending.



Close-up of Dayco draft press rolls as specified on Model F Davis and Furber Woolen Ring Spinning Frames. Dayco rolls maintain their smooth drawing action, with front roll speeds as high as 200 rpm, despite the occasional presence of lumps of foreign matter in the roping.

Order Dayco Cots the next time your Dayco representative calls or write The Dayton Rubber Company, Textile Division, 401 S. C. National Bank Building, Greenville, S.C., for further information.

Dayton Rubber

Dayco and Thorobred Textile Products for Better Spinning and Weaving

©D. R. 1958

OVERSEAS PLANT: THE DAYTON RUBBER CO., LTD., DUNDEE, SCOTLAND

MERCURY CLUTCH SELECTED STANDARD EQUIPMENT ON DAVIS & FURBER FRAME

WHAT DAVIS & FURBER SAY ABOUT THE MERCURY CLUTCH:

Smooth, easy, automatic starting is very important in the operation of the Davis & Furber Simplex Ring Spinning Frame. It minimizes starting strain and overload on the mechanism and motor, but more important on the yarn to prevent yarn broken ends during frame starting.

Mercury Clutch has been chosen as standard equipment on the Simplex because it supplies that type of starting, many times daily, on every Simplex. Its troublefree operation helps to maintain the frame's high efficiency.

MERCURY CLUTCH DIVISION
Automatic Steel Products, Inc.
1257F Camden Ave. S.W., Canton 6, Ohio

EDWARD H. BEST & CO.

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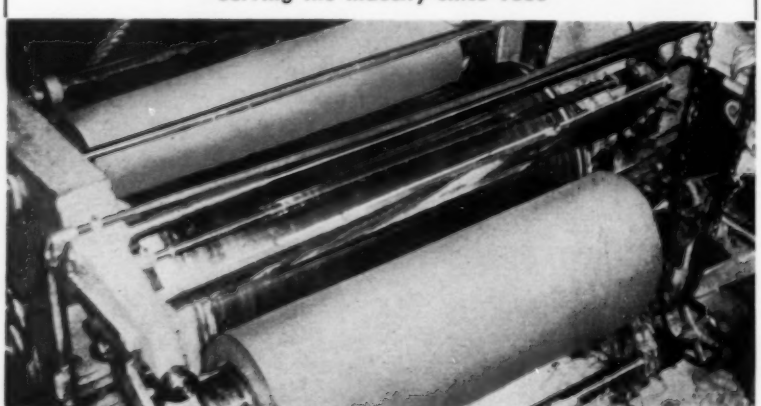

Installing a Rubber Compressive Shrinkage Blanket

Our new **RUBBER BLANKETS** are made from pure gum rubber for better finish and longer life.

Our **KNOXALL ALL WOOL BLANKETS** already hold records for finish and length of life in many plants.

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Boston 5, Mass. Hubbard 2-4450	Decatur, Ga. Dearborn 5974	Greenville, S. C. CEdar 2-0807 Park Place Branch

NEW LITERATURE Continued

E. I. du Pont de Nemours & Co., Inc. (F-15)

Cleaner and finisher—Described in folder from Reading Testing Laboratories, Inc. (F-16)

Laboratory supplies—A 16-p. booklet lists and describes many items for laboratory use. Schaar & Co. (F-17)

Polyethylene glycols—The properties, application, storage, specifications, and testing of polyethylene glycols is given in a booklet from Union Carbide Chemicals Co. (F-18)

Solid-film lubrication—Is described in Bulletin No. 2049 from Electrofilm, Inc. (F-19)

Vinyl acetate monomer—Characteristics described in Booklet RF-7575 from Union Carbide International Co. (F-20)

Dynel—A 16-p. illustrated booklet, "The Story of Dynel," is available from Textile Fibers Dept., Union Carbide Chemicals Co. (F-21)

Silicones—As dielectric materials reported in Booklet No. 10-105 from Dow Corning Corp. (F-22)

Diaphragm seals—To protect pressure instruments against corrosion and clogging are described in Bulletin 250 from Brooks Rotameter Co. (F-23)

Protective clothing—Listed and described in bulletin from Jomac, Inc. (F-24)

Cotton and Orlon blends in yarns—Report available from Lowell Technological Institute. (F-25)

MAINTENANCE & ENGINEERING

Corrosion-resistant materials — For building purposes described in catalog from Ralph V. Rulon, Inc. (F-26)

Drill-jig bushings—Complete line of bushings listed in Catalog 35875 by Ex-Cell-O Corp. (F-27)

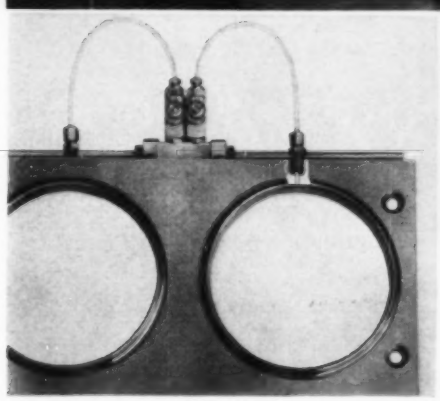
Pulley lagging—Eliminates belt slippage when applied to power-transmission pulleys or rollers. Folder from Condersite Engineering Corp. (F-28)

Couplings—Are described in a brochure from Koppers Co., Inc. (F-29)

Pipe coils—Can be replaced by coil panels described in Bulletin 258 from Dean Thermo-Panel Coil Div., Dean Products, Inc. (F-30)

Lubrication system—For textile and other types of machinery is described

Davis and Furber builds in *Lincoln* Power Lubrication to assure top equipment performance in the mill



Read what this leading textile machinery manufacturer says about *Lincoln* Power Lubrication of Spinning Frames

"Only Controlled Automatic Lubrication applied correctly to the Spinning Ring can assure the proper amount of uniform traveler drag on the yarn, plus a maximum ring and traveler life at known speed ranges.

"After a great deal of experimenting and testing in ring lubrication, we have chosen and recommend the Lincoln Centralized System to do the job best on our Woolen Spinning Frames.

"Lincoln System Ring Lubrication is one more advanced design feature in the Davis and Furber Woolen Ring Spinning Frame that adds up to better spinning with less end breakage, high spindle speeds and more uniform yarn twist."

Increase yield . . . cut operating costs

Lincoln Centralized Power Lubrication Systems apply viscous or fluid lubricants through sealed lines to all bearings on individual machines—or automated production lines. Lubricant is supplied under pressure at predetermined time intervals . . . unerringly . . . automatically . . . while the textile processing machines are in operation.

It will pay you to install Lincoln's low-cost systems on your existing equipment . . . and specify Lincoln when you're ready to purchase new textile machinery. **Call your nearby Lincoln Distributor. Write now for Bulletins 811 and 806R.**

Lincoln

LINCOLN ENGINEERING COMPANY
Division of The McNeil Machine & Engineering Co.
5742 Natural Bridge Avenue • St. Louis 20, Missouri

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(Advertisement)

WHAT YOU SHOULD KNOW ABOUT STARCH*

Significance of *STARCH VISCOSITY*

in the Textile Industry

By J. M. SEITZ
Director of Research
The Hubinger Company

Since chemical or physical modification of corn starch usually affects its inherent viscosity characteristics, methods of measurement and control of viscosity of starches used as textile auxiliaries have become very important.

Viscosity of corn starch sizes is important in that it must remain as nearly constant as possible during heavy mechanical agitation and across a wide temperature range, as variations affect the amount of size picked up by the yarn. In finishing, where many highly modified starches are used, viscosity of the starch paste must be closely controlled to provide proper body for machine handling while also contributing the solids content necessary in forming the film, which, with the other auxiliaries, will result in the proper hand or feel of the fabric. In print paste thickening, corn starch products must have viscosity characteristics which will impart body, plasticity, etc. to the printing paste for smooth operation on the rolls.

Corn starches with a variety of properties for which viscosity measurements can be used as control measures are now available to the textile industry. Such measurable properties include paste flow, flow and viscosity variation due to physical or chemical treatment, and paste aging characteristics.

Corn starch manufacturers utilize numerous viscometric instruments. For hot paste viscosities Scott, Saybolt, and Dudley crifice flow instruments are popular. Cold paste body is determined using such instruments as Stormer, MacMichael, or Hoeppler Viscosimeters, which utilize rotating cylinder with free-falling weight, rotating cylinder with torsion wire, and falling ball principles, respectively. A similar instrument, the Brookfield viscosimeter, is widely used. These instruments are generally used in control work in which effects of non-Newtonian properties of starch paste can be compensated.

Several instruments have been developed which give a continuous history of pasting operations. Among these are the Brabender Amylograph, and, more recently, the improved Corn Industries Viscometer (used in The Hubinger Co. laboratories as shown above). These instruments make possible a complete study of pasting characteristics, effect of temperature variation, addition of other compounds, effects of storage, etc., and give a permanent record. Both of these instruments are used extensively by corn starch manufacturers in preparing and pre-testing the specialized products required in the various textile auxiliary applications.

Viscosity has become increasingly important to corn starch manufacturers who, as The Hubinger Company, desire to supply more uniform starch products to the textile industry.

* One of a series of articles, for the complete set and for our continuing technical data service, write without obligation to

The Hubinger Company
KEOKUK, IOWA

NEW LITERATURE Continued

in literature from Stewart-Warner Corp. (F-31)

Alarms—For signaling or simple control functions are described in Bulletin 165 from Brooks Rotometer Co. (F-32)

Valves — For various purposes are listed in flyers from Atlas Valve Co. (F-33)

Centrifugal fans—Designed for heating, ventilating, and air-conditioning systems are described in a data sheet from Chicago Blower Corp. (F-34)

Settling tank—For removal of solids from water is described in folder from Link-Belt Co. (F-35)

GENERAL

Radioactivity in the Textile Industry—A reprint is available from Tracerlab, Inc. (F-36)

Water coolers—For industrial applications described in Bulletin 106 from Baltimore Aircoil Co., Inc. (F-37)

Cotton—Its romantic history is outlined in "Brush Talks" printed by M. W. Jenkins' Sons, Inc. (F-38)

Lift truck—Operator's guide issued by Towmotor Corp. (F-39)

Casters—Descriptions and specifications listed in bulletin from The Rapids-Standard Co., Inc. (F-40)

Business growth through factoring—Described in booklet from Commercial Factors Corp. (F-41)

Industrial safety and housekeeping—Are the subjects of two pamphlets issued by the National Safety Council. (F-42)

Office jobs — Booklet tells how to screen applicants. Martin Publishing Co. (F-43)

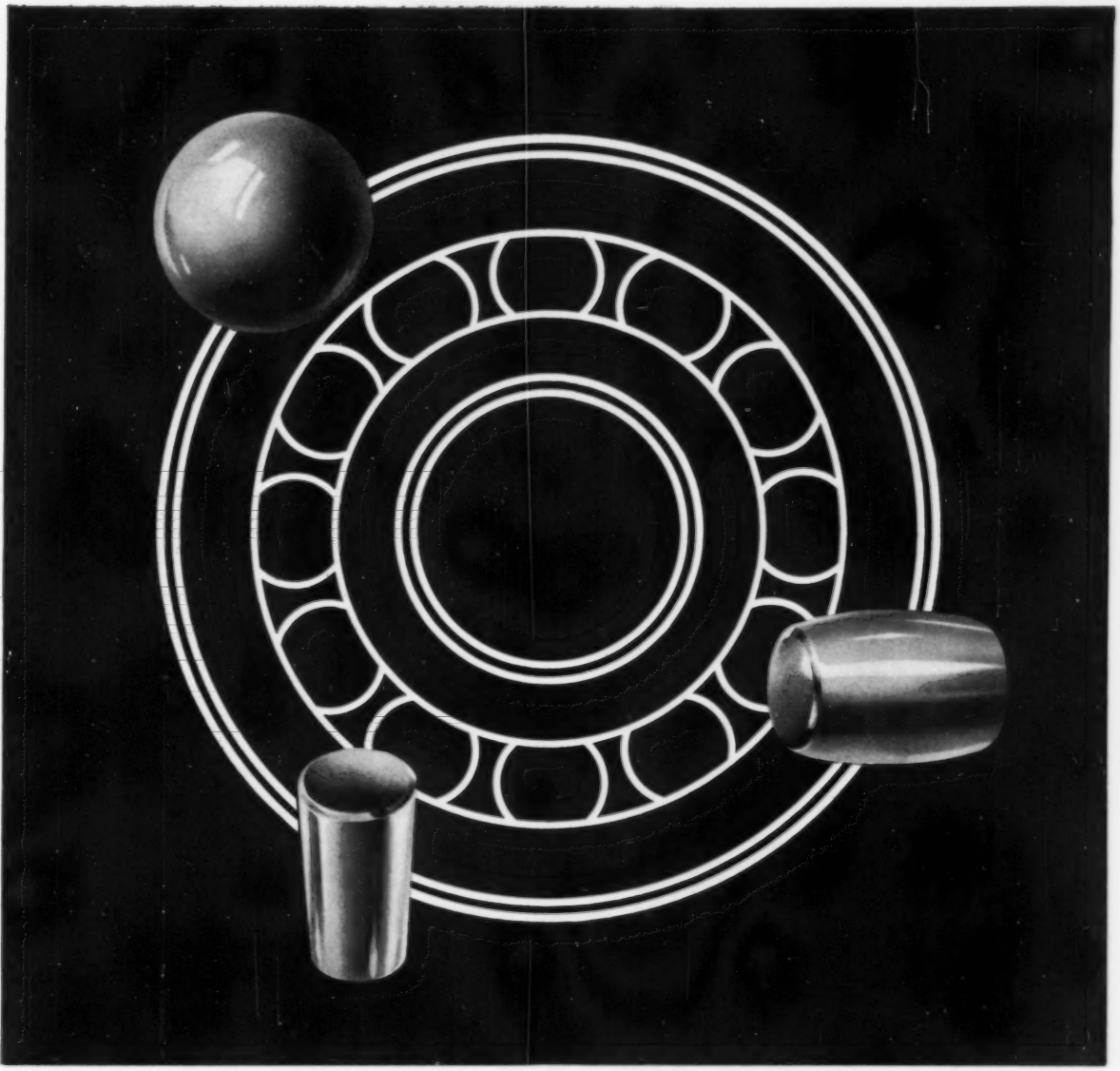
Cost reduction — Training programs described in folders from Amansco Div. of H. B. Maynard & Co., Inc. (F-44)

Fork lift truck—Described in circular from Lewis-Shepard Products, Inc. (F-45)

Steel-framed trucks — Listed in brochure from Fairbanks Co. (F-46)

Vacuum metallizing—New process described in Catalog No. 780 from Vacuum Equipment Div., F. J. Stokes Corp. (F-47)

Lift trucks—Cutaway views in brochure show operating features of



cut bearing maintenance . . . with one lubricant

Nebula EP – another first for Esso Research – is a multi-purpose grease that *out-performs* all other multi-purpose greases. And many specialized greases as well!

Nebula EP works exceptionally well in ball, tapered roller and roller bearings – of *all sizes* from rolling mills to precision instruments.

Nebula EP stands up under extreme heat. It retains its lubricating qualities at high temperatures at which many special heat-resistant greases would have broken down.

And Nebula EP has exceptional water-resistant and rust-preventive properties – an important consideration where water is a factor. What's more, Nebula EP is formulated with a true soap which gives it extra anti-wear and load-carrying characteristics – for an extra margin of protection. High oxidation stability gives Nebula EP longer life in storage and in use.

Nebula EP can be applied by *any* of the conventional methods. Get the whole story about this fine product . . . from your nearest Esso Standard Oil Company Division Office: Boston; Pelham, N. Y.; Elizabeth, N. J.; Bala-Cynwyd, Pa.; Baltimore; Richmond; Charlotte; Columbia, S. C.; Memphis; New Orleans.

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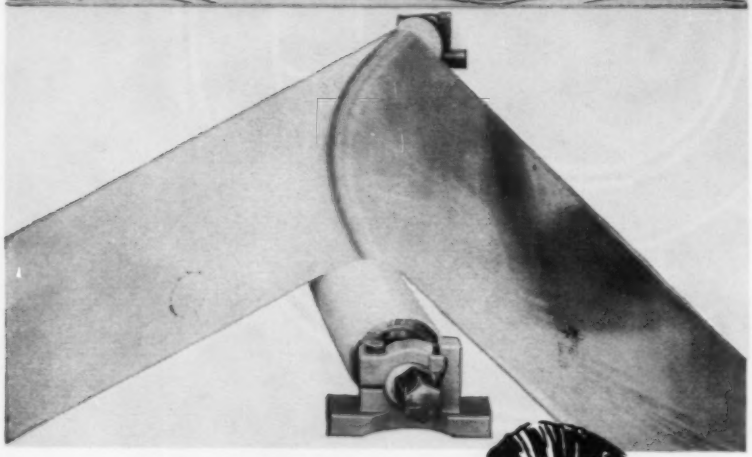
Simplest Solution...

Wrinkles
Loss of width
Distortion

MOUNT HOPE "Free-Wheeling" EXPANDERS



That's the report from modern mill men everywhere . . . MOUNT HOPE "Free-Wheeling" EXPANDERS have proved to be the simplest, surest way to keep cloth smooth, at full width, and free from distortion. One of many such cases is described in the free, illustrated folder shown below. Send for it. Find out how easily you can protect quality and profits with MOUNT HOPE "Free-Wheeling" Expanders. Fill out and mail coupon today.

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trucks by Yale & Towne Mfg. Co. (F-48)

Bulletin boards and metal signs—Described in folders from A. C. Davenport & Son, Inc. (F-49)

Stretchers—For steel strapping listed and described in booklet from Acme Steel Co. (F-50)

Textile World

BOOK REVIEWS

MATERIALS HANDLING EQUIPMENT, by D. Oliphant Haynes; Chilton Publications, 56th & Chestnut Sts., Philadelphia 39, Pa.; 636 pages, 2200 illustrations, $17.50.

This collection of information on a subject of great importance to any industry covers the field very thoroughly.

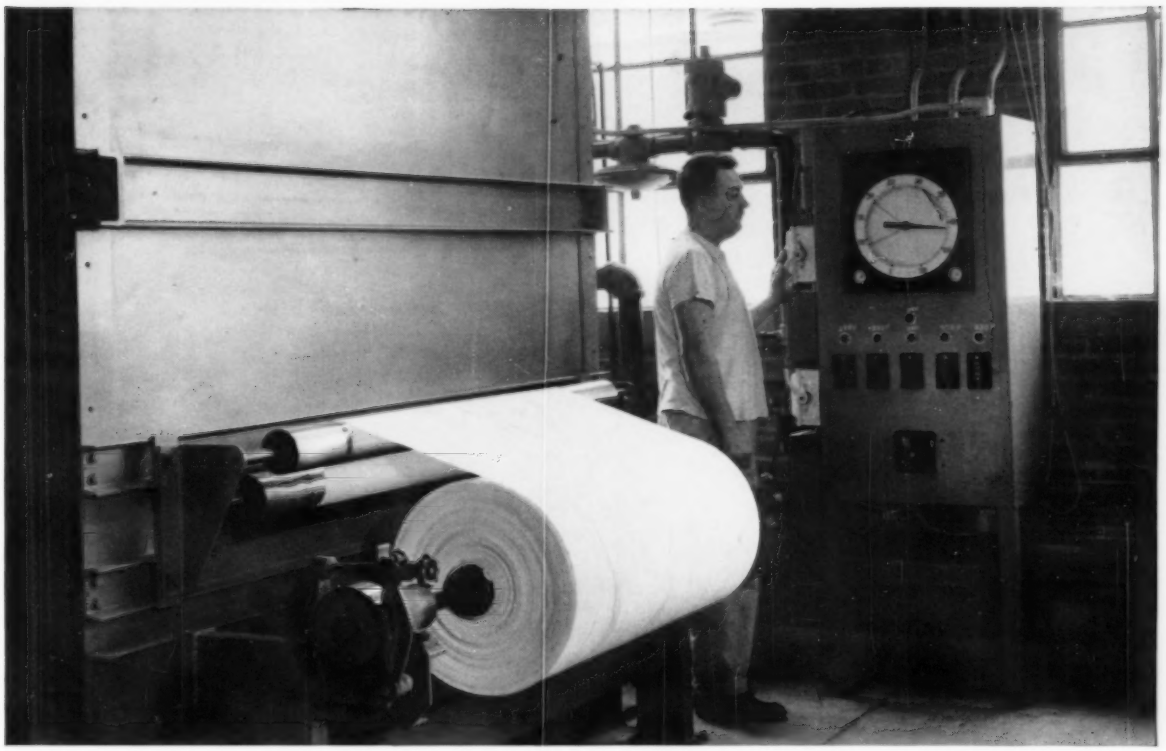
Starting with basic types of equipment, the book tells readers how to handle it to the best advantage, how to integrate materials handling with production, and how to organize and control handling systems.

Chapters on analysis and design of systems for handling materials in various forms and cost analyses of moving materials are included in this comprehensive treatment of the materials-handling phase of industry.

THE INDUSTRIAL CHEMISTRY, PROPERTIES, AND APPLICATION OF SILICONES, by Charles E. Reed; American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.; paper, $1.50.

This booklet goes into the structure and application of silicone compounds at considerable length, as well as describing the manufacturing processes that have been developed to make silicones.

While not primarily directed to the textile chemist, the book lists some textile applications of silicones to water-repellant products and contains much background information concerning these relatively new materials.



Accurately measure and control nylon heat-setting temperatures . . .

without touching the fabric!

Forget about staining and snagging . . . this Honeywell system eliminates dragging a temperature sensing element over the fabric. And, forget about over- or under-heating . . . this system assures temperature control within extremely narrow limits.

A *Radiamatic* sensing element detects heat rays emitted from the fabric. The rays are focused by a lens on a cluster of tiny thermocouples, creating an electrical signal in proportion to temperature. An *ElectroniK* instrument transforms the signal to a measurement of temperature . . . and controls input of electricity to the heater units, to *maintain pre-set fabric temperature.*

Wherever product temperature is the important determinant of finish, you'll find the *Radiamatic* a valuable production tool. Your nearby Honeywell field engineer can give you complete details. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Division*, Wayne and Windrim Aves, Philadelphia 44, Pa.

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H HONEYWELL *First in Controls*

Multicolored limonite with red iron ore. Potosi, Bolivia

CIBA

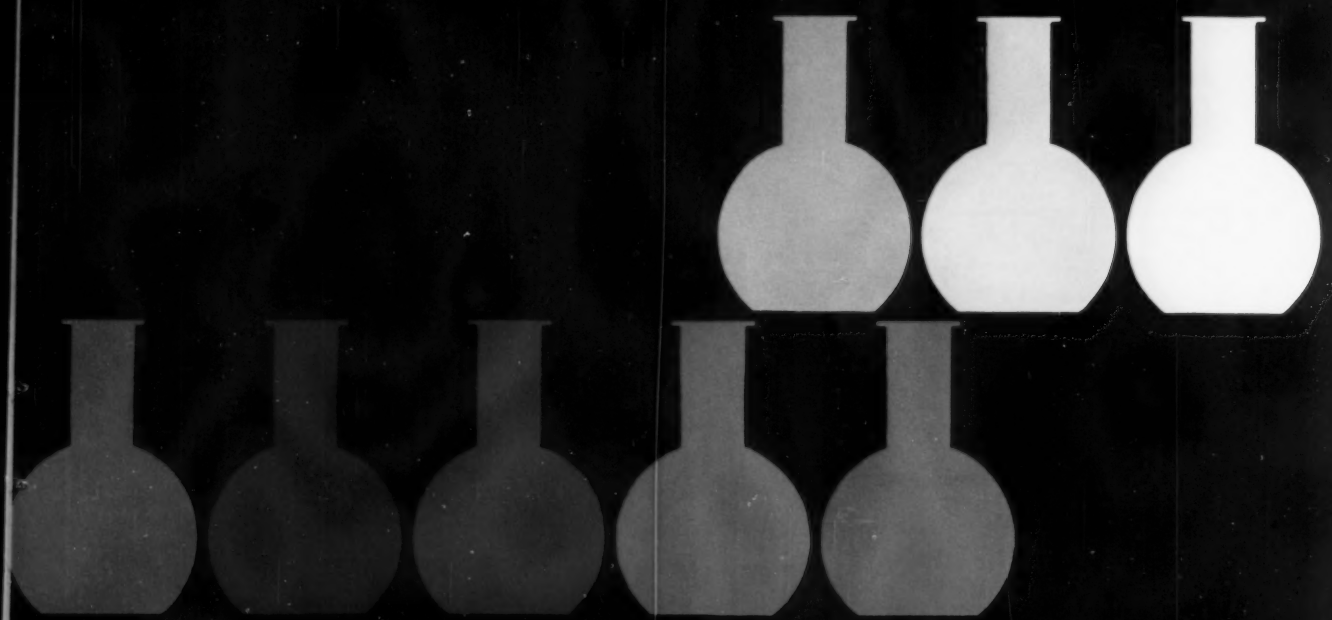
Cibacron®

New opportunities for fabric design . . . the dyer . . . and the fashion stylist! The Cibacron reactive dyes present excitingly beautiful colors of outstanding fastness, applied simply.

Dyes of the Cibacron range are applied by padding, exhaust dyeing and printing procedures. Three simple steps are involved: (1) dyeing, (2) fixation and (3) soaping and rinsing.

Cibacron padding methods are versatile and give excellent results. Newly developed exhaust dyeing procedures yield brilliant shades on rawstock, yarns and knitted or woven fabrics. A range of goods from sheers to blends to carpeting are dyeable as never before.

Textile prints with Cibacron dyes have a soft finish and do not look dull or painted. The process is flexible, permitting continuous steaming, a short aging or dry fixation without aging.



Cibacron dyes are novel, with uniquely beautiful, fast shades on cotton, rayon and other fibers. Brilliant, fascinating and bound to the fiber by chemical reaction—Cibacron colors in dyeings and prints are breath-takingly different and long wearing. Their luminescent beauty adds new possibilities to fashion designing. Eight fast self colors provide an extraordinary range of brilliant shades.

CIBA Company Inc.,
627 Greenwich Street, New York 14, N. Y.

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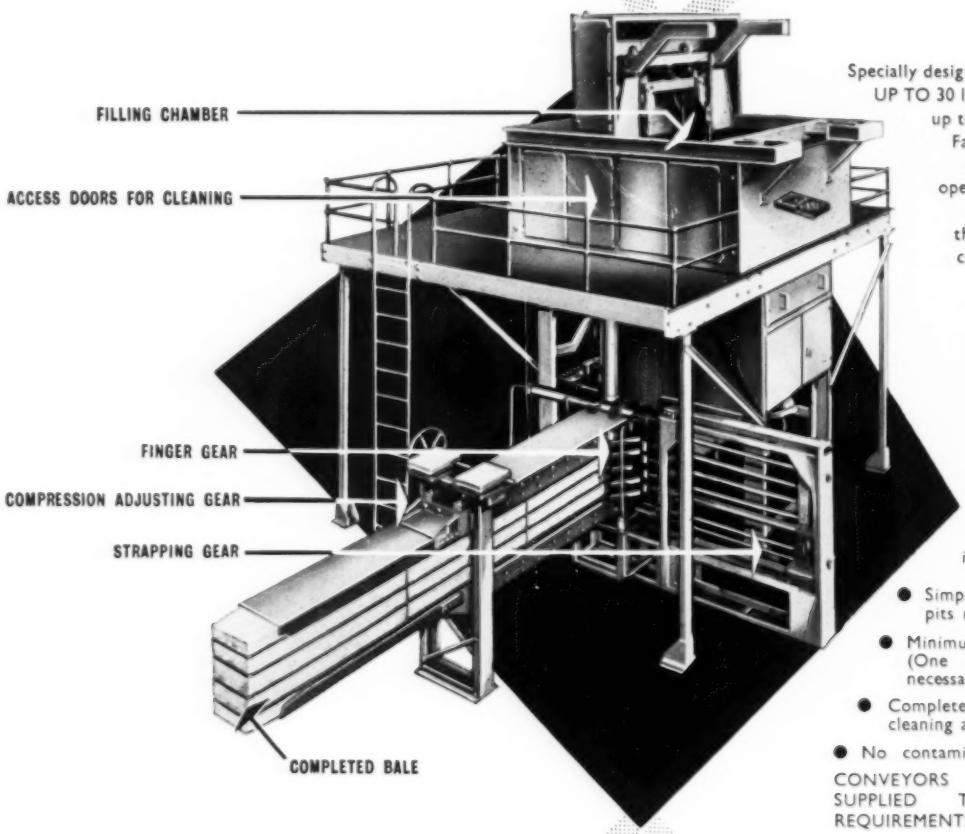
PRESENT THE **FAWCETT**

HORIZONTAL SYNTHETIC

FIBRE BALING PRESS

FOR AUTOMATIC OPERATION



Specially designed to handle BALES UP TO 30 lbs/cu. ft. density and up to 400 lbs. weight, the Fawcett Baling Press is entirely automatic in operation with the fibre being delivered from the spinning lines by a conveyor and weigher direct to the trampling box. Full safety measures are incorporated throughout the full cycle of operation whether automatic or hand controlled. Outstanding advantages of the Fawcett Press include:—

- Simple installation. (No pits required)
- Minimum labour costs. (One operator only is necessary)
- Complete accessibility for cleaning and maintenance.
- No contamination of material.

CONVEYORS AND WEIGHERS SUPPLIED TO CUSTOMERS REQUIREMENTS

PRESS FRAME AND BOX OF ALL-STEEL 'COLCLAD' CONSTRUCTION
HYDRAULICALLY OPERATED MAIN RAM WITH ADJUSTABLE STROKE & PRESSURE REGULATION
HOPPER DOOR OF MILD STEEL 'COLCLAD' PLATE PNEUMATICALLY OPERATED & FITTED WITH HOOD
AUTOMATIC POSITIVE LOCKING OF TRAMPLER PLATEN IN BALING POSITION
AUTOMATIC SELF-STRAPPING OF BALE
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In association with Fawcett Preston & Co. Ltd, and Finney Presses Ltd,

FF/155

BOBBIN VARIATIONS

CONTINUED FROM PAGE 51

than one skein per bobbin. Total variation and within-bobbin variation can then be determined and the between-bobbin component of variance calculated.

No more than two weighings per bobbin are recommended. The total number of weighings will be limited by the time available. Spread the weighings among as many bobbins as possible.

One large sample of 30 bobbins or more can be taken on a certain day. By analysis of variance, the total within-bobbin and between-bobbin variation can be calculated. This procedure was used in the survey but is not recommended for routine quality control.

A succession of small samples can be taken that are spread out in time. Several such samples (10 are suggested) are combined to obtain values of the total and within-bobbin variation.

Spread Out the Samples

Such a spreading out of the samples is to be recommended, particularly for the calculation of between-bobbin variations because of its slightly erratic character. Within-bobbin variation is fairly consistent from day to day.

Between-bobbin variation on the other hand bears some characteristics of a processing fault and may be the result of between-machine differences caused by inconsiderate changes of draft bearing at some intermediate process in the mill. As the gears are changed back and forth, between-bobbin yarn-size variation in the yarn may go up or down from day to day or week to week.

Yarn numbers are usually determined from samples of four or five bobbins. To calculate between-bobbin variation, the only change is to make two instead of one weighing per bobbin.

Because the two 120-yd. skeins have to be separated by several hundred yards of yarn, the reeling may be tiring if no motor-driven reel is available. The taking of samples can, however, be spread over several days.

When the data are collected, an analysis of variance will give the between-bobbin component of variance. A conventional analysis of variance will rarely be desirable in a mill. Ranges or squares of ranges can be made easier than a conventional analysis of variance, and the estimates of the between-bobbin variation are precise enough for quality-control purposes.

DIRT-RESISTANT Tennantized floor allows faster sweeping. Saves manhours.

Why most money-making mills have TENNANT-maintained floors

Mills that make money *today* usually know their maintenance costs to a penny.

That's why about 9 out of 10 successful mills, large and small, use the TENNANT SYSTEM of Floor Maintenance.

They know, from their own cost records, that this system provides clean, bright floors *at the lowest cost per sq. ft. of any floor maintenance method* available today. Here's why:

How the TENNANT SYSTEM cuts floor care costs...

1 **SAVES TIME.** Dirt is easily wiped off surface.

2 **SAVES FLOOR SEAL.** Tennantized floors seldom need refinishing.

3 **SAVES BUFFING.** New method brightens floor; cuts buffing time as much as 80%.

SAVES MANHOURS—*Tennantized* floors have 3 times the dirt resistance of most textile floors. Saves cleaning time, cuts sweeping costs, etc.

REQUIRES LESS FLOOR SEAL—New custom-fitted TENNANT seals *last longer than any comparable materials we know of.* Cuts annual seal costs and recoating expense. WRITE TODAY *for full details. G. H. Tennant Co., 737D N. Lilac Drive, Minneapolis 22, Minn.*

TENNANT

The Textile Industry's Most Widely Used

FLOOR MAINTENANCE SYSTEM

Methods

Machines

Materials

FLOOR MAINTENANCE SYSTEMS

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17 reasons why the Carrier Rotaspray

TODAY'S BIGGEST

1 DESIGNED SPECIFICALLY FOR TEXTILE MILLS The Carrier Rotaspray Weathermaker* System is a brand-new air conditioning system designed especially for textile mills. It meets mill problems head-on, and solves them in a simple, direct manner.

2 UNITARY DESIGN Instead of one large central station system serving several departments, each department has its own Rotaspray unit, and can change its temperature and humidity to meet its individual requirements.

3 SMALLER APPARATUS SIZE A Carrier Rotaspray unit requires about ⅓ the space of a conventional air washer system of equal capacity. Individual units may be suspended from ceiling, located on the roof, or hung on outside walls. Valuable space is saved.

4 REDUCES CLEANING AND MAINTENANCE COSTS Rotaspray units, with exclusive self-cleaning design, require very little maintenance. In contrast, conventional systems require costly week-end cleaning to remove lint and to service nozzle banks.

5 NEEDS NO APPARATUS ROOMS No rooms are required to house Rotaspray Weathermaker units, even when located outside the mill. Apparatus rooms are essential for conventional central station systems. The Carrier Rotaspray System eliminates this costly item.

6 LASTS INDEFINITELY Carrier Rotaspray units are constructed of stainless steel for a long life of trouble-free service. The cost of cleaning and repainting is eliminated.

7 ELIMINATES MANY SYSTEM COMPONENTS Because of the new Carrier system's revolutionary design, Rotaspray units give better performance, yet the units need no water strainer, no water pump, no water tank, no city water and drain piping, no apparatus room, and no floor drains. Conventional systems require all of these.

8 NEEDS NO AIR FILTERS Instead of trying to keep lint out as conventional systems do, the Carrier system is designed to let it enter, then separates it from the air and returns it to a central point where it is automatically collected for disposal. As a result, the Carrier Rotaspray System needs no air filters, cuts the cost of lint removal to a minimum.

9 BETTER HUMIDITY AND TEMPERATURE CONTROL By using a new Carrier-developed control method, the Rotaspray System controls humidity and temperature much more accurately than any conventional method. Dewpoint control and its problems are eliminated. Within system capacity, departments simply "dial" the temperatures and humidities wanted.

10 BETTER ATOMIZER CONTROL High-humidity systems use atomizers which spray fine water particles directly into the air. Conventional systems must turn these atomizers on and off to regulate moisture content. This causes wide variations in room humidity. With the Rotaspray System, atomizers always operate at full capacity, preventing humidity variations.

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Weathermaker Air Conditioning System is

TEXTILE NEWS!

11 CONSTANT AIR SUPPLY Conventional systems use automatic dampers which close down and reduce the amount of air delivered to the room. Though this causes variations in temperature and humidity, it is a "must" in such systems to prevent excessive operating costs. With the Rotaspray System, air supply is always constant, yet greater operating economy is provided.

12 LONGER FAN LIFE In conventional systems, it is necessary to place the fan on the unit's leaving side. High humidities here cause excessive rusting and corrosion, shorten fan life in spite of cleaning and repainting. The Rotaspray unit, designed to place the fan on the entering side where humidities are lower, greatly lengthens fan life.

13 RELOCATES EASILY TO MEET MILL CHANGES Relocation of conventional systems is difficult and costly, usually requires tearing down part of the apparatus room and rebuilding a new room to house the system after relocation. Rotaspray units require no housing, are small enough and light enough to allow easy relocation.

14 ALLOWS LOWER AIR QUANTITIES Carrier Rotaspray Weathermaker Systems require from 5 to 10% less supply air than conventional systems. Result: better air distribution with smaller ductwork.

15 ELIMINATES "COMPROMISE" TEMPERATURES AND HUMIDITIES When one large conventional system serves several departments, it is impossible for all to hold the exact temperatures and humidities needed. What's more, air supplied to one area often flows across another, causing drafts and upsetting conditions. With the new Carrier System, exact conditions can be maintained, and air flow is restricted to its own area.

16 SIMPLIFIES EVAPORATIVE COOLING NOW—AND ADDING COOLING LATER When a conventional system is converted from evaporative cooling to dehumidifying service, many expensive modifications are required. Along with refrigeration, it is necessary to add extensive chilled water lines, weir tanks, water storage tanks, automatic water control valves, etc. With a Rotaspray System, none of these must be added. Except for minor modifications of the control system, the only change is the addition of a water-chilling machine. A mill can easily install evaporative cooling now, add refrigeration later.

17 PROVIDES MORE AT A COMPETITIVE PRICE Though individual mill conditions vary, on the average you pay no more for a Rotaspray System than for conventional "high-quality" systems. And you get a lot more back in efficiency and economy of operation and maintenance. For complete information about the revolutionary new Carrier Rotaspray Weathermaker System, write Carrier Corporation, Syracuse, New York.

®Reg. U.S. Pat. Off.

Air Conditioning · Refrigeration · Industrial Heating

Carrier

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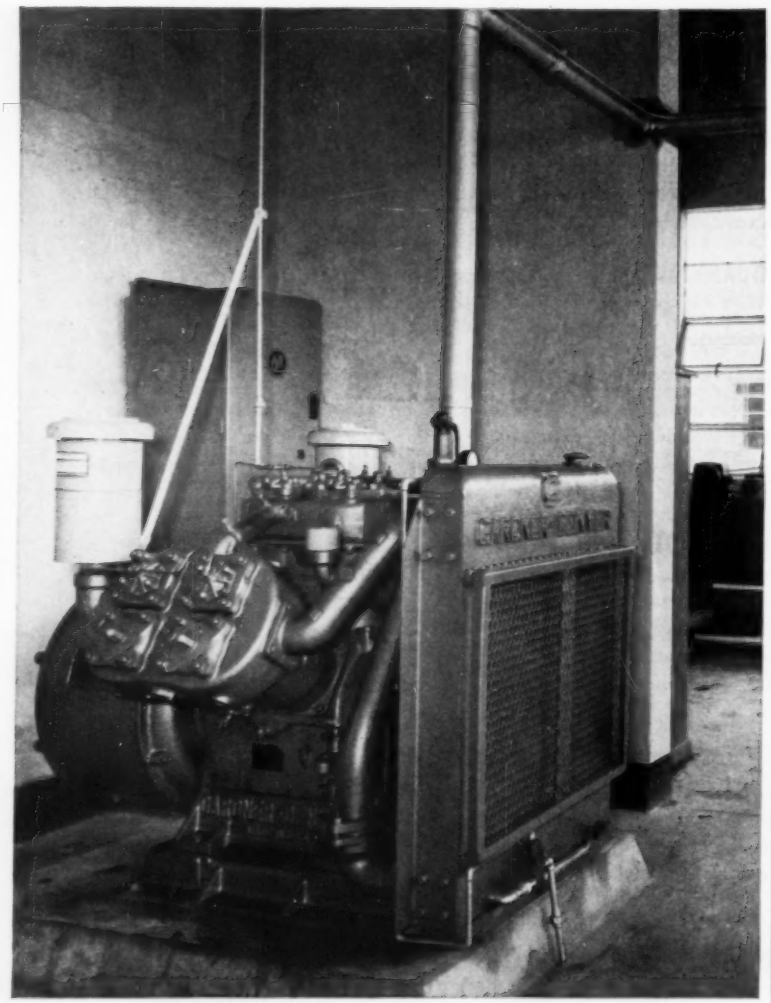
GARDNER DENVER

Compact and efficient, the Gardner-Denver WB supplies low-cost compressed air power from a small corner of your plant. The "W" design saves floor space. Balanced high- and low-pressure cylinders eliminate vibration and the need for expensive foundation. Pump circulates cooling water around cylinders and separate valve chambers. That's the story of WB quality. Want details? Send for Bulletin WB-10.

Stationary air compressors . . . tank-mounted compressor outfits . . . oil-free air compressors . . . whatever your compressed air needs, see your Gardner-Denver compressor specialist first. Gardner-Denver Company, Quincy, Illinois.

Compact . . . efficient

WB Two-Stage Compressor



CONTROL CHARTS

CONTINUED FROM PAGE 51

faults on a report. The reports are transferred to the C chart at the end of the day.

Charts Are Checked Daily

The supervisor checks the C charts daily, and if a C chart shows a looper out of control, the supervisor talks with the looper and shows her the chart. The looper generally improves her work, but if she stays out of control her eyes are tested, the looping machine is checked, or she is retrained. She is given every possible chance to improve.

If loopers show no more than one mender each day for more than three days, she is awarded a gold star on her C chart. We have several operators who have had no menders in the samples taken in a three-month period.

After an improvement in quality, which is shown on the P chart, the control lines are lowered. For the P charts, the formula for three-sigma limits is—

$$P \pm 3\sqrt{\frac{P(1-P)}{n}}$$

Where P is the proportion defective
n is the number in the sample
The formula for C-chart limits is—

$$C \pm 3\sqrt{C}$$

Where C is the central line or average.

QUALITY INFORMATION

CONTINUED FROM PAGE 50

gray and finished fabric. Results of these tests are plotted on a variable-versus-date graph. These graphs are used to check trends.

We use a point system for inspection of the final product. The point values of the defects are added together and compared with the yardage for grading purposes.

A recheck inspection is made from a random sampling of the inspected fabric to check the inspection level and detect drifts from standard. This inspection is usually done on first-quality goods. The results of the recheck are reported to management twice weekly.

New Machines Are Evaluated

Test procedures on experimental work, such as the evaluation of a new spinning frame, are prepared; and a preliminary test plan is issued by the

central laboratory. This test plan establishes such procedures as the number of samples to be sent to the laboratory and the procedure in gathering samples.

A final report is issued by the laboratory in which the test results are evaluated and conclusions drawn. This test may be made in collaboration with the standards department, which evaluates the results from the viewpoint of machine efficiency. Suggestions from supervisors are carefully considered.

Customer complaints are handled by the quality-control department because a central collection point is necessary and the complaint must be settled on unbiased examinations. Complaints often detect trends before they become serious, and quality control indicates these trends to management and advises on how to avoid further complaints.

TWISTED NOVELTY YARN

CONTINUED FROM PAGE 78

is desired, it is best to have the core yarn delivered from the front rolls.

If an intermittent-cover yarn is desired, use of the over-running clutch crown gear gives a continuous twisting effect.

The cover end is delivered from the front roll as shown in Fig. 7. Core yarn is delivered from the back rolls and is passed over the guide rod; the cover yarn meets the core yarn under the cover guide. This method, which is best for making continuous-cover yarn, does not require the over-running clutch crown gear.

Here Are Some General Pointers

In twisting novelty yarn on the spinning frame, more and better effects can be obtained by using different-color yarn or yarn that gives different colors when cross dyed. The field is practically unlimited.

In making these yarns, oil rings generally give the best results. There are any number of oil rings on the market that are suitable and easy to obtain.

One of the most difficult problems in producing novelty yarn is selecting the right traveler. About the best way to solve this problem is to run experiments and obtain the assistance of a good traveler man. The traveler companies have engineers available who know novelty yarn, and they can be of great help. The wrong traveler can

Stop Lint Damage

the low-cost way

Save both time and material with lightweight, inexpensive, air-powered roll pickers. These handy tools easily reach into tough, tight corners, cracks and crevices. They collect damaging lint more efficiently than hand-picking methods . . . than hand-powered rotating tools.

Cost-cutting design features include: rotary-type air motor . . . cool running . . . instant start and stop . . . air exhausts out back of housing—won't blow lint into material being worked . . . built-in speed regulator . . . light weight—easy to manipulate. Contact your nearest Gardner-Denver office for a demonstration of economical Keller Tool roll pickers, or write for complete information.

ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

GARDNER DENVER

Gardner-Denver Company, Quincy, Illinois

BRANCH OFFICES: Atlanta, Ga.; Birmingham, Ala.; Knoxville, Tenn.; Washington, D. C.; New York, N. Y.; Philadelphia, Pa.; Pittsburgh, Pa.; New Orleans, La.; Louisville, Ky.

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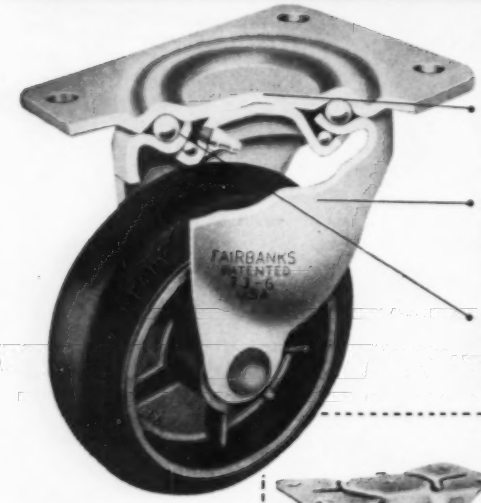
ACHIEVEMENT
IN CASTER DESIGN
FAIRBANKS
"LOCKWELD" Swivel Casters — Without King-Pin!



CHECK these unmatched advantages:

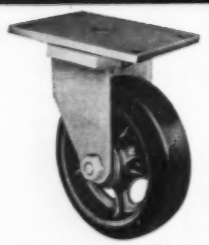
- No King-Pin. Patented "LOCKWELD" construction eliminates the major cause of caster failures.
- Patented leg design—spherical shape provides greater strength through better dispersion of shocks and overloads, easier swiveling under load.
- Larger raceways and ball bearings — perfectly aligned by the rigid welded structure — give faster, easier swiveling action.

Fairbanks Series "23" double ball race swivel casters, for medium duty, sizes 3" to 8".

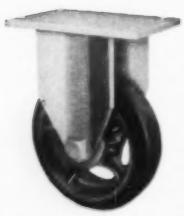
Fairbanks Series "33" rigid casters, match Series "23" casters in height, sizes 3" to 8".

Fairbanks Series "21" single ball race swivel casters, for regular duty, sizes 2" to 6". Matching rigid Series "31" casters available.

HEAVY DUTY STEEL CASTERS

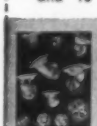


Fairbanks Series "27" double race swivel casters, for heavy duty, sizes 6", 8" and 10".



Fairbanks Series "37" rigid casters match the Series "27" casters in height, sizes 6", 8" and 10"

Fairbanks Series "500" Vulcanized Rubber Tired Wheels, roller bearing, sizes 3" to 18". Standard of the industry



YOURS ON REQUEST: Casters and wheels catalog complete with specifications and details. Write for your free copy today.

Order Fairbanks products through your local distributor who is always ready to serve you.

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cause quality troubles as well as ends down.

In making twisted novelty yarn at the spinning frame, a number of different guides are necessary. These guides should be chrome plated or made of some kind of hard substance because the continuous filaments and hard-twist spun yarns cut soft guides to pieces.

Tensions Prevent Kinking

Tensions are necessary to prevent the yarn from kinking or from overrunning and causing tangles and snarls. Generally, a sand-blast tension gives very good control if it is installed correctly.

Some type of creel that is adaptable to the spinning frame and adequate for the different sizes and shapes of packages used today is necessary for both spun and continuous-filament yarn. Local conditions determine the kind of creel to use.

Another factor to consider is the build of the bobbin, which may have to be changed for good winding and to prevent sloughing off. The proper build can be determined only by experimenting.

In making twisted novelty yarn, most types have to be conditioned either by steaming or by some other method before they can be processed from the twisting bobbin. There are a number of steaming cabinets and yarn conditioners on the market that do a good job. If the yarn is to be conditioned by steaming, a suitable bobbin must be used.

YARN AND FABRIC QUALITY

CONTINUED FROM PAGE 58

son; the correlation was perfect.

If we had not tested our cottons by the pilot-mill test method, we would have raised a fuss to find out why our yarn was getting worse while the cotton showed a higher grade every year.

Why are the American and Mexican cottons year after year becoming more and more difficult to clean?

The answer is that the ginners are now doing a job that previously was left to the spinner; and by doing so, they dupe the customer. But that does not help the spinner.

Let us go back to the old days when ginning was just separating the lint from the seed and the responsibility for making good yarn was left entirely to the spinner.

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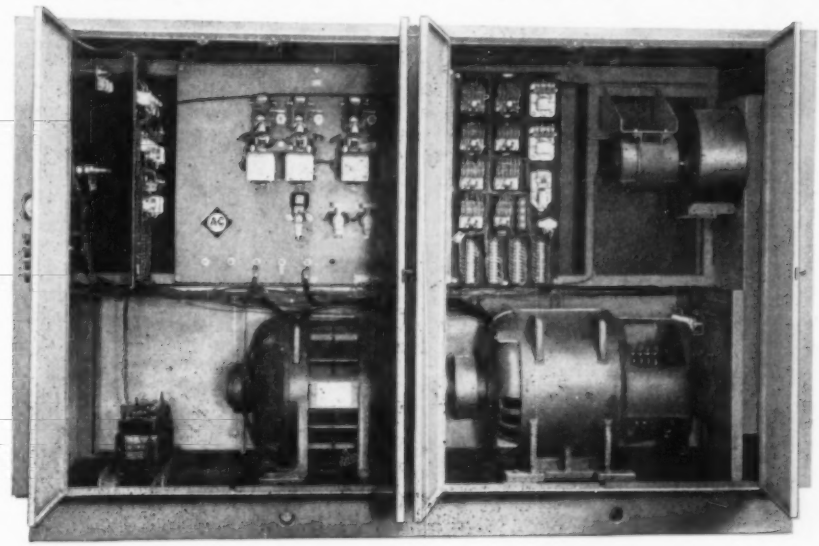
long-run power by Allis-Chalmers



Size 5 *Ultra-Speed* power unit, rated 125 hp, providing reversing and regenerative braking.

New dependability in power conversion

Ultra-Speed — remember it! It's a name you'll be hearing more and more. It identifies Allis-Chalmers variable-speed package drive — the complete power conversion unit featuring wide speed range and continuity of operation.

Here, in a compact, filtered air cabinet, is all the equipment necessary for on-the-spot conversion. Components are precisely integrated. M-g sets are selected for exact horsepower requirements; magnetic amplifiers are provided for smooth, selective speed control.

Look to *Ultra-Speed* package drives for savings in maintenance and installation, and for longer tool life. Call your nearby A-C office, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wis.

Available in standard sizes 1 to 6, 5 to 200 hp; larger sizes on request.

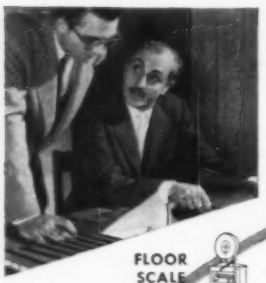
A-5690

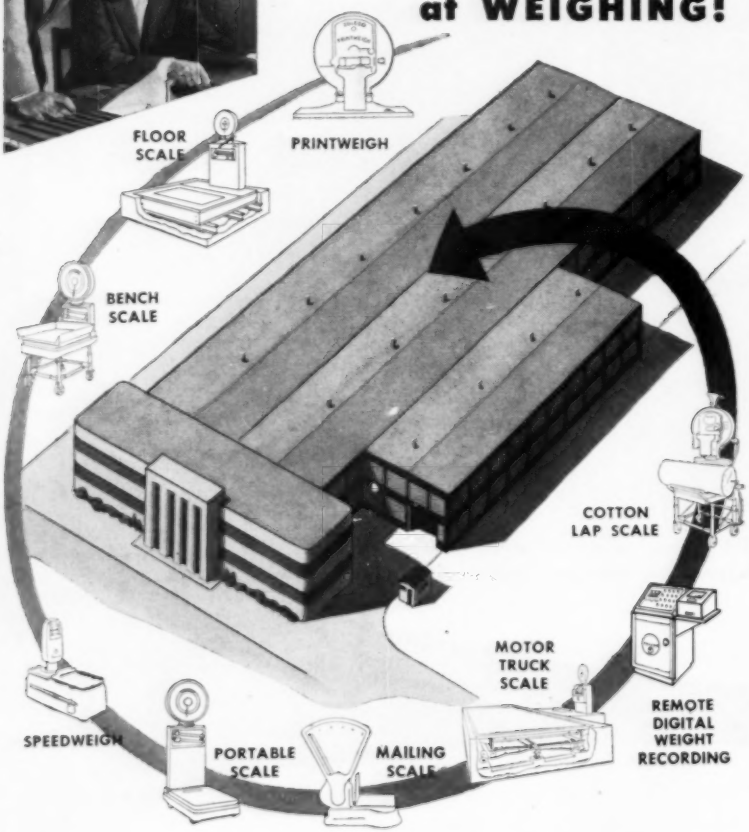
ALLIS-CHALMERS

Ultra-Speed is an Allis-Chalmers trademark.

Studying Costs? It pays to start with a

Plant-Wide Look at WEIGHING!





You can lessen the impact of rising costs by making sure your scales are doing the best possible job. Remember that weighing today is not a job for isolated scales—it's a vital element in your overall cost control system.

Weight records directly affect costs, quality, inventory control and customer billing. Weighing errors, or inadequate weight data, can be avoided by having the right scales in the right places . . . all carefully integrated in a plant-wide weighing system to supply basic records on materials received, shipped or transferred. Check your needs now! TOLEDO SCALE, Div. of Toledo Scale Corp., 1409 Telegraph Road, Toledo 13, Ohio.

TOLEDO SCALE *Headquarters for Weighing Systems*

DIVISION OF TOLEDO SCALE CORPORATION

☐ **NEW TOLEDO WEIGHT FACT KIT**

will help you determine how well your scales measure up as a weighing system—help you detect weighing losses that drain profits. Request your kit now. No obligation.

☐ Industrial Scale Line ☐ Electronic Load Cell Scales ☐ Motor Truck Scales ☐ Electronic Remote Digital Weights

WE'LL BE GLAD TO MAIL THE LITERATURE YOU CHECK.

BINOMIAL PROBABILITY

CONTINUED FROM PAGE 73

ample, the lot with a paired count of 460,25 is out of control.

Each paired count has a trigonometric relation on the paper and should be plotted as a small triangle. Assuming B is the number of rejected tests from a sample size A, the vertices of the triangle for the paired count (a − b, b) would be (a − b, b) (a − b + 1, b) and (a − b, b + 1).

For example, the paired count in Problem No. 4 would be plotted (41,5) (42,5) (41,6). The center of the hypotenuse is the middle of the paired count.

The same relationship applies to the coordinate for the split line. The perpendicular line is drawn from the center point of each triangle. As the sample size increases, the triangle becomes almost indistinctive and can be disregarded for many problems.

SRRL ATTACHMENT

CONTINUED FROM PAGE 55

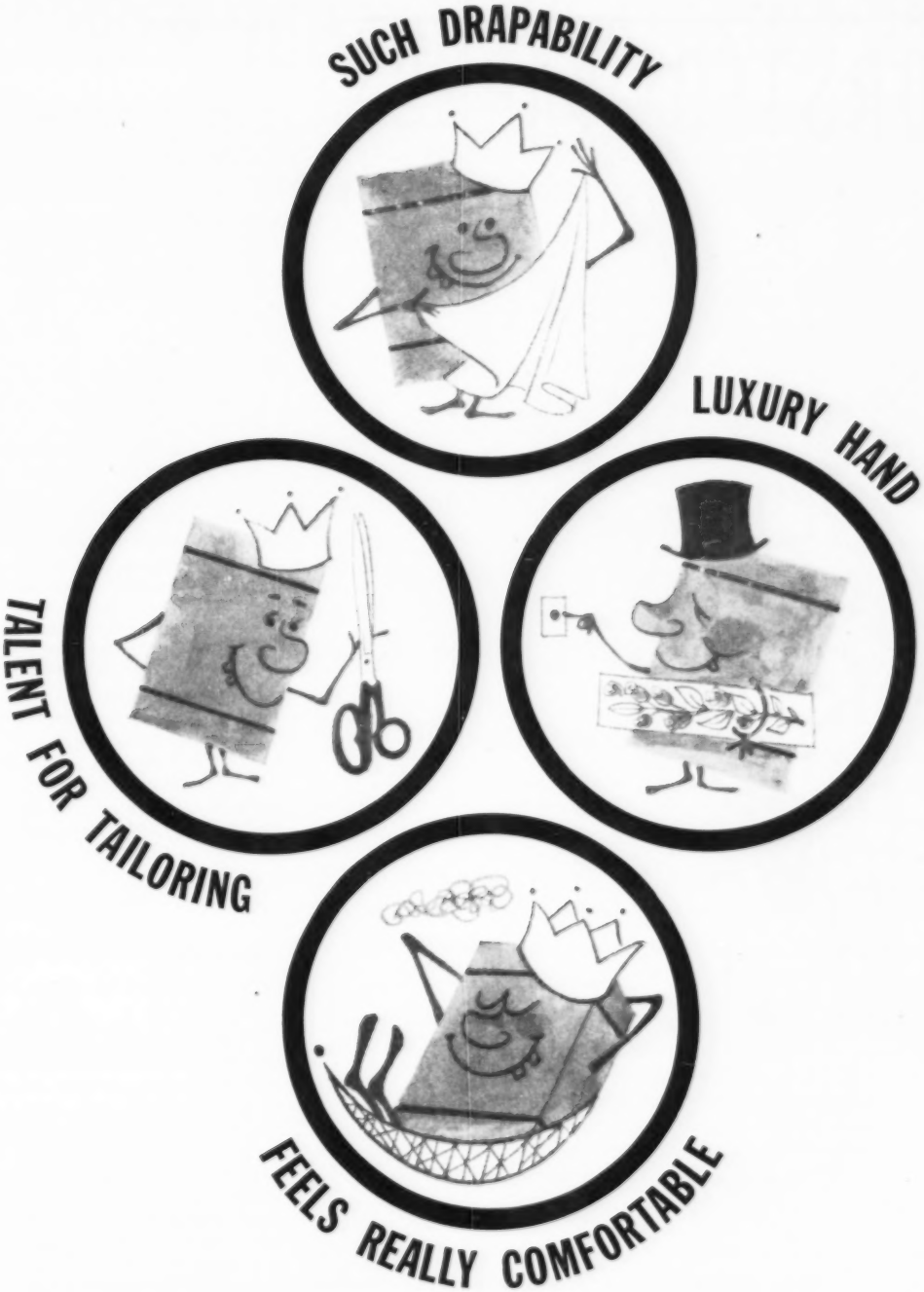
cards. The apparatus weighs less than 200 lbs., compared to about 1,000 lbs. for the assembly it replaces.

The attachment completely seals the top of the card; so a major source of dust and fly is eliminated. The apparatus in itself has no moving parts; however, associated with it is one small moving component installed in connection with the lickerin setup.

After removal of the flats, installation can be made in 3 to 4 hrs. by two men. Initial cost should not be excessive. The original unit for experimentation cost $1,100, but this cost should be halved easily with reasonable production.

It is not feasible to predict maintenance costs on the basis of performance in the laboratory; but maintenance should be very low since only one part is subject to wear, and so far there is no evidence of wear after intermittent operation for one year. Operating cost is zero because the device requires no power and there is no cotton waste to strip.

Carding without flats shows promise of major increases in production rates, and research at the Southern Regional Research Laboratory is continuing with the objective of doubling carding rates while maintaining or improving quality. It is anticipated that design details of the SRRL carding apparatus will be publicly available within the year.



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Enka's most modern plant and equipment offers you precision-produced staple for plus performance.

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WORSTED YARNS

package-dyed by GLOBE

for suitings and dress materials

Worsted yarns dyed by Globe are your assurance of bright, clear colors, good matches, and superior knitting and weaving qualities.

Globe does package dyeing on tubes, skein and warp dyeing and bleaching, warp mercerizing and sizing.

Yarns we process include cotton, rayon, worsted, nylon, linen, blend and novelty yarns. Also Acrilan, Dacron, Orlon, Arnel, Zefran, and Banlon.

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Globe Dye Works Co.

NEPOTOMETER

CONTINUED FROM PAGE 57

average nep potential. Nep potentials are 2.00, 2.65, 2.75, 2.80, and 3.15. The increments between lots (the difference between nep-potential grades) were different in each case.

These grades may be reduced to the expected change in number of neps per 100 sq. ins. of card web and the number of imperfections in 50 yds. of yarn for a change of one full Nepotometer grade at each of these average levels.

The data are inadequate to warrant quantitative conclusions, but they permit some inference regarding the probable response of yarn quality to nep potential. At low levels of nep potential, such as Grade 2 and below, a unit variation in nep potential would not produce as great an effect on yarn quality as a unit change at a higher level such as Grade 3 or higher.

The higher the Nepotometer grade, the greater is the increment of neps in the card-web and yarn imperfections. Quality differences were highly significant with a change of one Nepotometer grade, from 2 to 3. The results obtained with the higher nep-potential cottons exceeded the quality levels established; the change in yarn quality is apparent from the decrease in yarn appearance.

CLEAN WEAVE ROOMS

CONTINUED FROM PAGE 53

In addition to blowing off, fixtures are taken down and washed in one mill every four months, once every six months in one mill, once a year in one mill, and at infrequent schedules in the other three mills.

Humidity systems are cleaned just as often as individual mills think they need attention. A typical cleaning schedule is: Control boxes are blown out every 8 hrs., heads are cleaned only when the need for cleaning is indicated, pipes are wiped off once a week, and fans to the evaporative-cooling system are blown out once a week.

Mills with air-changing systems give more attention to the entire humidification system than those without.

Walls and overhead areas are cleaned or blown down at the same time lighting fixtures are blown down in all mills.

Overhead cleaning is done several ways: with aluminum tubing as extension handles for brooms, with ladders, and with rolling scaffolds.

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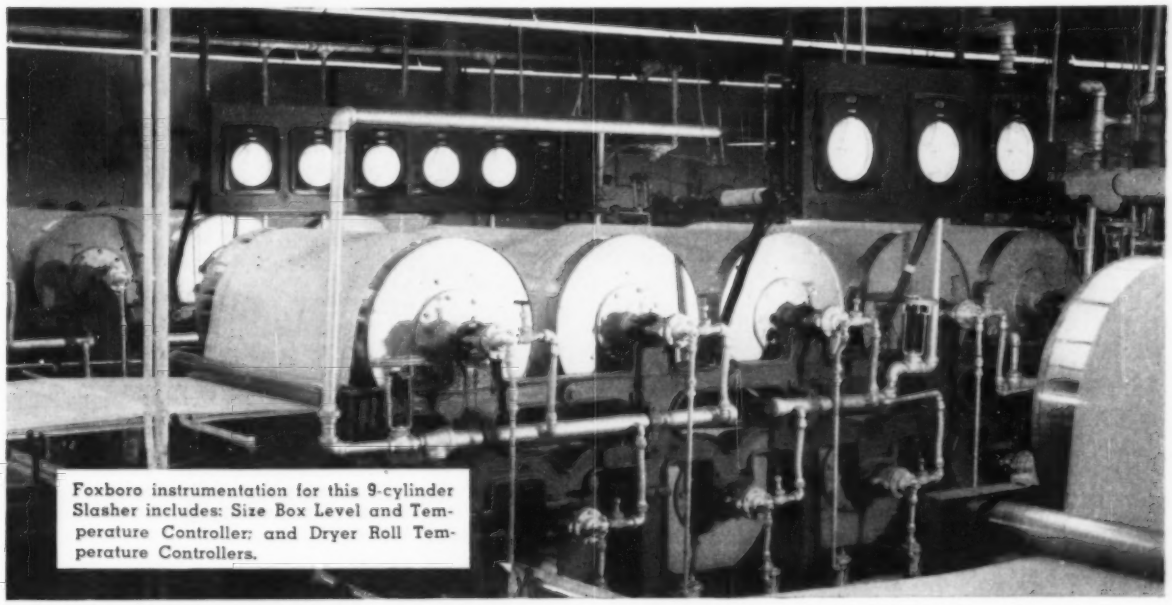
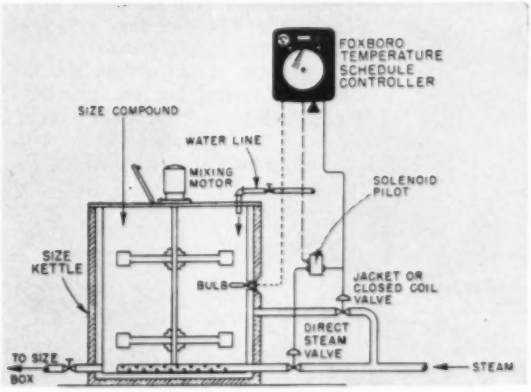
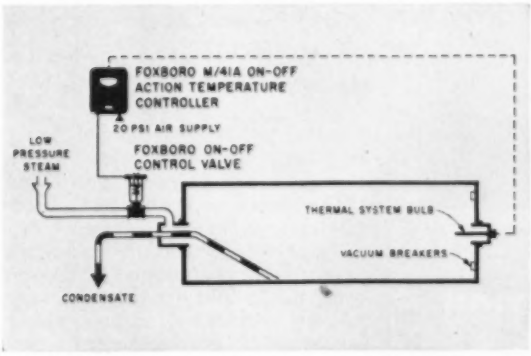
FOXBORO AUTOMATES THE SLASHER ROOM!



Foxboro instrumentation for this 9-cylinder Slasher includes: Size Box Level and Temperature Controller; and Dryer Roll Temperature Controllers.



Foxboro Dual-Purpose Size-Kettle Control



Foxboro On-Off Control System for Dryer Rolls

complete control system:

- **cooks — stores size at proper temperatures — automatically**
- **holds dryer roll temperatures constant — automatically**
- **maintains pneumatic loading of squeeze rolls — automatically**

From size box to dryer roll you can depend on Foxboro control to increase the efficiency of your Slasher operation.

Take Foxboro's Dual-Purpose Size-Kettle Temperature Schedule Controller, for example. This exclusive instrument controls the temperature of BOTH size cooking and storage — with direct steam and jacket heating. Temperature shifts are automatic — no hazards of boil-over. And size dilution is completely eliminated — regardless of storage time.

Or take Foxboro Dryer Roll Temperature Control. This simple, on-off system developed by Foxboro eliminates compressed air purge in the removal of steam condensate . . . even as low as 140°F!

And for over-all Slasher Room efficiency, don't overlook size box level control, viscosity recording, and pneumatic squeeze roll loading. These, too, are Foxboro-engineered to improve yarn quality . . . automatically. Write today for full details. **The Foxboro Company, 844 Neponset Ave., Foxboro, Mass., U.S.A.**

FOXBORO REG. U.S. PAT. OFF. **SLASHER ROOM CONTROL**

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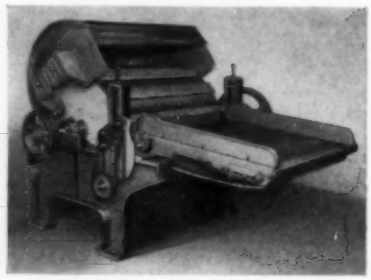
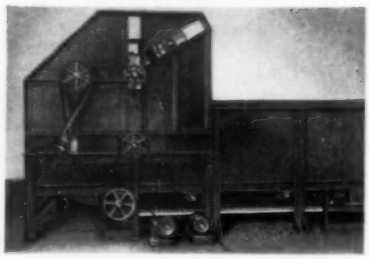
For Better Fibre Processing
SARGENT
OPENERS, PICKERS, DUSTERS
any fibre – any blend

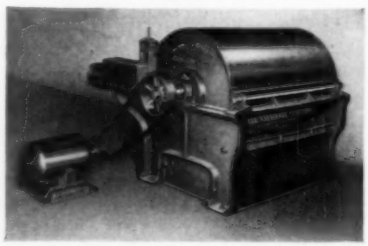
From heaviest grease wool to finest dyed synthetic staple, there's a Sargent to do the job with automatic, continuous precision. Set it and forget it — dependable, rugged, economical machines that pay for themselves many times over in quality fibre protection — in steady, trouble-free production. All are adaptable to double duty. All are designed to make the next succeeding process easier, quicker, better. All save every usable fibre for utmost processing economy for you. It will pay you to look into Sargent equipment without delay.



Wet-and-Dry Picker for synthetic staple after drying, for opening bleached cotton prior to drying.



Heavy Duty Opener with built-in Rotary Feed for opening compressed bales of wool, cotton, synthetics; compacted cheeses of dyed fibres. Semi-combing action for more uniform web to card.



Sargent's Mixing Picker — high speed — for continuous blending systems.

Cott Openers, Crush Roll Machines, Bale Openers, Rotary Feed Openers, Burr Pickers, Squirrel Cage Dusters, Carbonizing Dusters, Mixing Pickers, Cone Dusters, Rag Dusters, Picker-Dusters.

C. G. SARGENT'S SONS CORPORATION
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CHARLOTTE, N.C. — W. S. Anderson, Carolina Specialty Co.
ATLANTA, GA. — J. R. Angel, Mortgage Guarantee Building
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LOOM-STOP CHECKS

CONTINUED FROM PAGE 69

producing looms on each inspection tour. Then compare the results of this check with the results expected.

Compute the X^2 (chi-squared) value, and compare the results with an X^2 table to determine whether the difference is greater than for chance alone.

In computing the expected distribution of stops, use:

1. Poisson tables when NP is 0.1 to 25
2. The binomial expansion when P is 0.005 to 0.50 and the number of trips is small (unless tables are available)
3. The normal curve distribution when P is close to 0.50

Plant Men Always Know Results

Give a copy of the weekly summary of the ratio-delay check to the weave-room overseer and plant superintendent.

The engineering department should post the figures from the summaries on an analysis pad or should chart them so that trends or large variations will be noticed immediately.

In addition to weave-room use, the ratio-delay system can be applied to any machine-paced operation or completely manual operation. Indirect labor is a particularly rich field for its application.

SLASHER DRIVE

CONTINUED FROM PAGE 79

others tend to relax. It is important to know the yarn characteristics in this critical area.

No Shrinkage During Drying

A tension zone exists between the first can or cylinder on a slasher and the last one. Tension will vary through the first few cylinders, but unless slippage occurs there will be no shrinkage during the drying process.

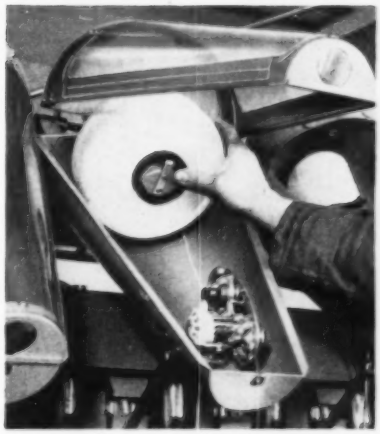
There must be enough tension between the drying section and the delivery roll to split out the sized warp properly. Additional tension should not be added between the drying section and the delivery roll if it is not needed to split out the yarn.

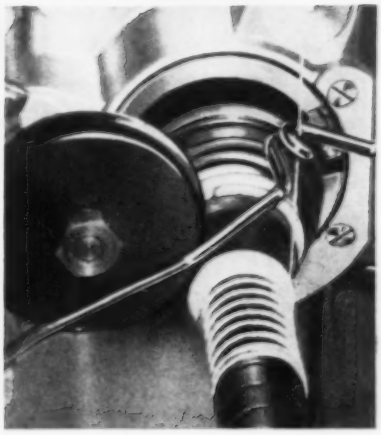
The tension between the delivery roll and the loom beam can be only slightly higher than the tension in the split-out sections. A presser roll can be used to press or pack the yarn more

SCHWEITER

Suction hood takes all normal cross wound bobbins, also cheeses ▶

ROTOR device for tailless bobbins reduces labor when filling loom batteries ▶▶

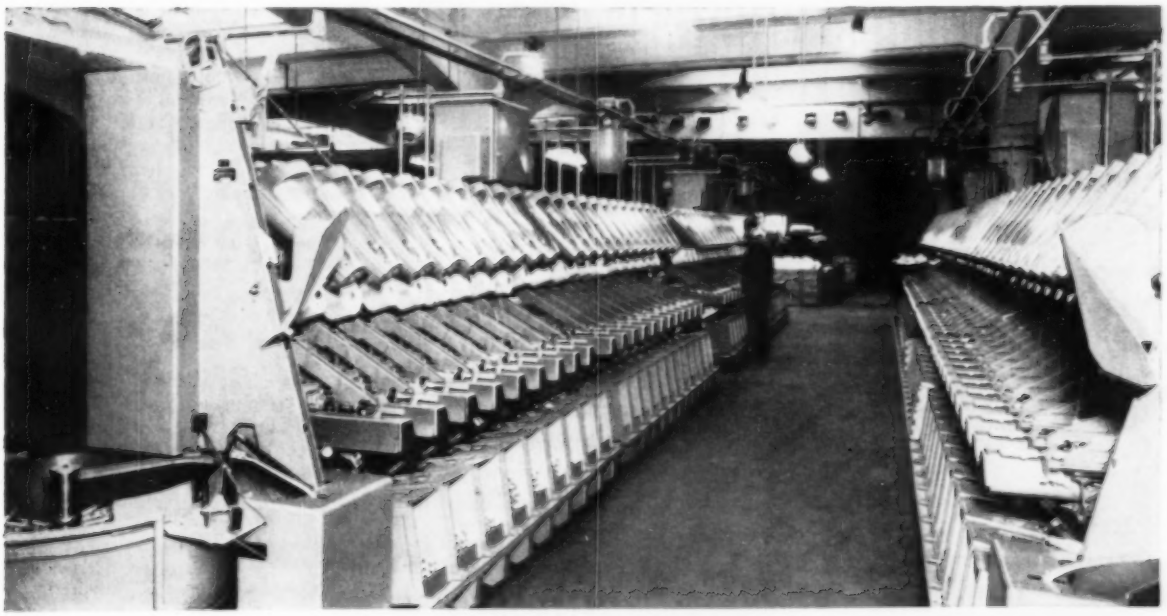




SUPER-AUTOMATIC BOBBIN WINDER type MSL

This is one of the most efficient, most versatile machines in the automatic bobbin winder field

- **Automatic feeding device for empty bobbins**
- **Individual apparatuses** • **Automatic suction dust remover**
- **ROTOR device for tailless bobbins** • **Spindle speed 10,000 r.p.m.**
- **Bobbin packing device PACKER, for transporting bobbins directly to the loom**



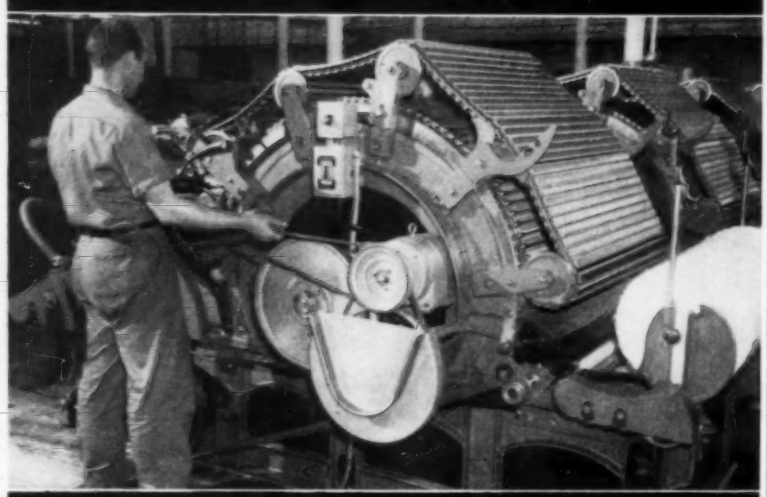
SCHWEITER LTD.

HORGEN (Zurich) Switzerland

Manufactured by **WHITIN MACHINE WORKS**, *Whitinsville, Mass. (U. S. A.) for sale in U. S. A. and Canada*
Manufactured by **SCHWEITER** *for sale in other countries*

For more data, write this page number on Reader-Service card. →

newest, most widely specified card drive . . .



BOOSTS PRODUCT QUALITY AND OUTPUT, CUTS OPERATING, MAINTENANCE COSTS

The textile industry's newest, most widely specified and least expensive card drive, manufactured by T. B. Wood's, is a simple, smooth-starting unit designed to provide years of trouble-free service.

Wood's drive offers the many advantages of individual card drives, but has no clutches and gear reducers to adjust, maintain and lubricate. Cumbersome flat belt pulley and lineshaft construction and accompanying hazards and power losses are eliminated. In case of motor or mechanical failure, only one card is idled.

Improved product quality and quantity are assured through elimination of belt slip and better control of operating speeds as well as reduction of static and the amount of lint and dirt in the atmosphere.

Contact your T. B. Wood's representative for complete details and your copy of Bulletin No. 6100.

V-BELT DRIVES • VARIABLE SPEED DRIVES • TIMING BELT DRIVES • CARD DRIVES • FLEXIBLE AND RIGID COUPLINGS • FLYWHEELS • PULLEYS • MOTOR BASES • BALL BEARING PILLOW BLOCKS, FLANGE UNITS AND TAKE-UP BEARINGS • BABBITTED AND BRONZE BEARINGS • DUCTILE IRON PRODUCTS

Woods

T. B. WOOD'S SONS COMPANY
CHAMBERSBURG, PENNSYLVANIA

CAMBRIDGE • NEWARK • DALLAS • CLEVELAND • ATLANTA

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firmly on the beam. But to stretch the yarn in this area will damage it and will affect the area of contact between the size envelope and the yarn.

A slight decrease in tension should occur as the beam builds up in diameter. A tapered tension of 5 to 15% will tend to prevent crinkling of the inner layers of the warp.

All these points must be considered carefully before the correct drive with adequate horsepower can be selected.

EQUIPMENT & SUPPLY NEWS

CONTINUED FROM PAGE 146

Endless Spinning Tape

An endless spinning tape developed by Nitto Kogyo Co. Ltd., Japan, has been introduced to North American mills by Edward S. Rudnick, P. O. Box 244, New Bedford, Mass.

The tape is woven from cotton, nylon, or Kuremora by a patented process whereby the same warp yarn is used throughout to form continuous loops. The cylinder has to be disjointed to install the tape. The life of the tape is said to be many years.

Advantages claimed are: wears up to six times as long as jointed tapes; reduces power consumption, produces a more-even twist, and reduces tension on the idler pulley because of less slippage; eliminates shock on spindle bearings and whirls caused by tape seams; picks up little fly because of a special finish.

Circle T-25 on Reader-Service Card

Automatic Loom

An automatic loom for worsted fabrics is announced by William H. Baker, P. O. Box 44, Barrington, R. I.

The loom will weave 82-in. goods at 170 ppm., and higher speeds are possible. There is no bang-off, and the loom can be stopped with the shuttle in the shed without any warp ends being broken.

The let-off does not require any attention from full to empty beam. The loom has a four-cell filling battery.

Circle T-26 on Reader-Service Card

Pump Motors

A line of solid-shaft motors for vertical-pump installations is announced by Reliance Electric & Engineering

To manufacturers, converters, cutters, wholesalers and retailers:

LET'S GET THE FACTS STRAIGHT ABOUT MODERN RAYON

Many of the newer synthetic fibers which rocketed to fame in a flurry of claims, a few years ago, have recently suffered a good deal of debunking in trade and consumer circles.

This is hurtful to all of us in the apparel and home furnishings fields. It throws a smoke screen of doubt over the technical improvements and consumer benefits of *every* fiber—including rayon, the world's oldest, most used and *most improved* man-made fiber.

1958 Avisco rayon is not the rayon we all knew in 1945, in 1950—even in 1955. Intensified laboratory research has greatly improved it both in *structure* and in *use*.

It is stronger and vastly more versatile.

It can be kitten-soft in sterile surgical dressings or tiger-tough in tires beneath a truckload of crushed rock.

By itself, rayon can be silky, woolly, cottony or linen-like. In blends, it contributes its unique ability to take and hold gorgeous colors, absorb perspiration, and cut and drape and shape and stitch without seam slippage.

Improper *use* of rayon is swiftly disappearing. Remarkable new finishes, applied properly, add greatly to its superb washability, colorfastness, luster and comfort. The Avisco Integrity Program sets the standards for proper processing to meet end use requirements, and makes it worthwhile for everyone in the trade to observe these standards.

Many important cutters are adding the Avisco Integrity Tag to apparel and home furnishings made from qualified fabrics. Many retailers find that this added assurance of quality rayon sells more goods and *keeps* them sold.

AMERICAN VISCOSE CORPORATION, 350 Fifth Avenue, New York 1, New York

For more data, write this page number on Reader-Service card. →

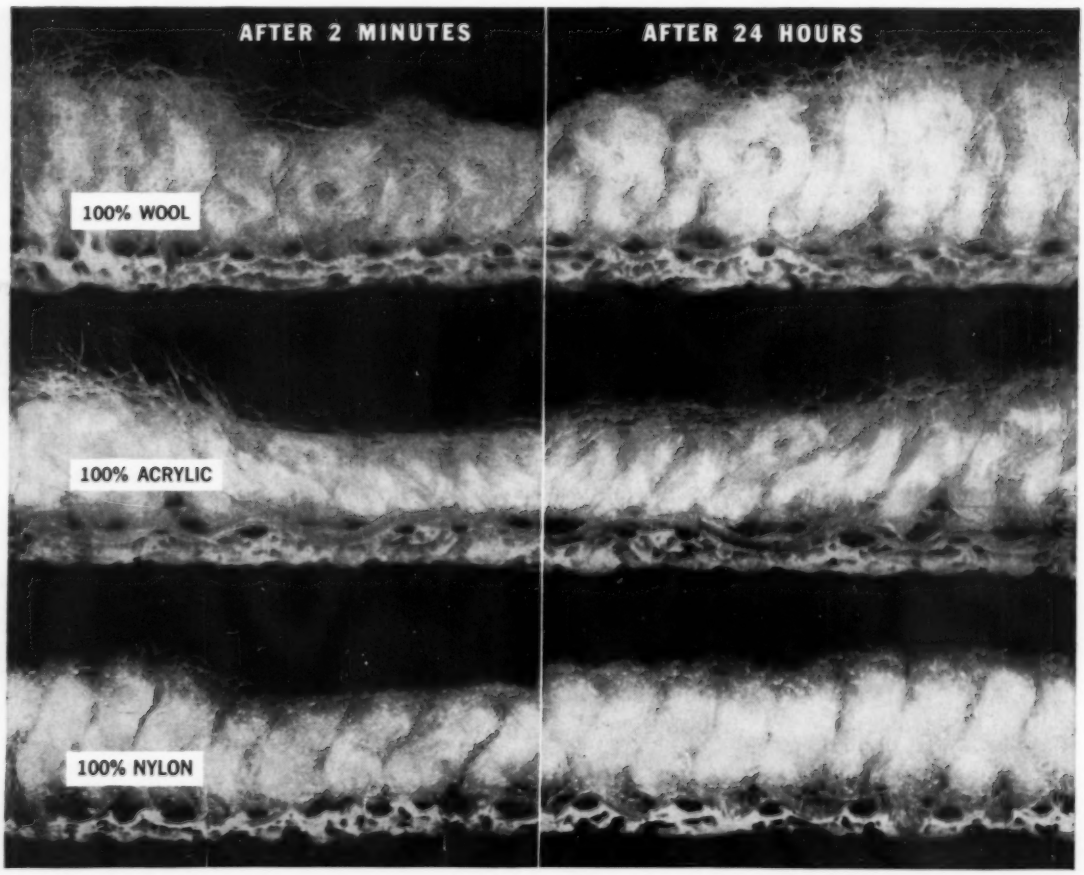
tests prove nylon has superb recovery from crush

Two separate and distinct tests are shown here. Within each test, identical carpets (except for fiber content) were subjected to a concentrated weight of 25 pounds per square inch pressure. This is comparable to the weight of a standard sofa. Photos were taken 2 minutes after removal of load and again 24 hours later.

Although wool and the acrylic start recovery more quickly, they *do not recover as completely as nylon after 24 hours.*

TEST NO. 1...NYLON COMPARED WITH WOOL AND ACRYLIC

LOOP PILE CONSTRUCTION



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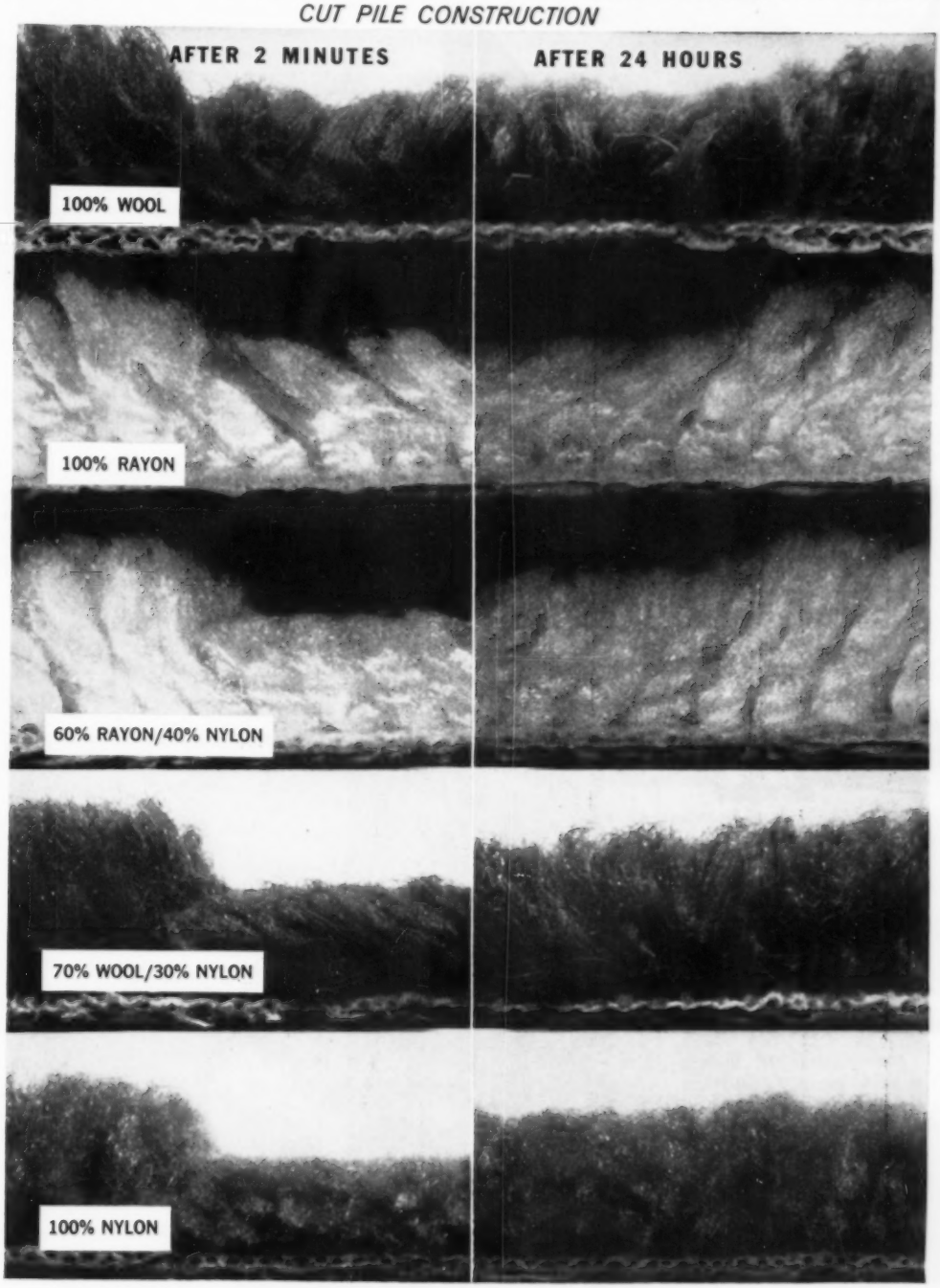
TEST NO. 2 . . . NYLON COMPARED WITH WOOL AND WITH RAYON

CUT PILE CONSTRUCTION



THE NEW Nylon Staple

I·R·C

INDUSTRIAL RAYON CORPORATION,
500 Fifth Avenue, New York 36, New York · 627 Guilford Building, Greensboro, North Carolina

For more data, write this page number on Reader-Service card. →

BUILT to MEET RESPONSIBILITY

PUMPS *"by Aurora"*

Capacities to 4,600 G.P.M.
Heads to 300 Ft.
AURORA® Type OJ Horizontally Split Case, Double Suction, Single Stage Centrifugal Pump
WRITE for BULLETIN 105-BM
The Type OD-OJ-OMB PUMPS —for general water supply for municipalities, industries, office buildings, institutions—also—for handling liquids, chemical solutions, oils, etc. in industry.
APCO TURBINE-TYPE PUMPS —ideal for "1001" duties where small capacities and high heads predominate. Get acquainted.
AURORA Always PUMPS
Write for CONDENSED CATALOG "M"

DISTRIBUTORS IN PRINCIPAL CITIES

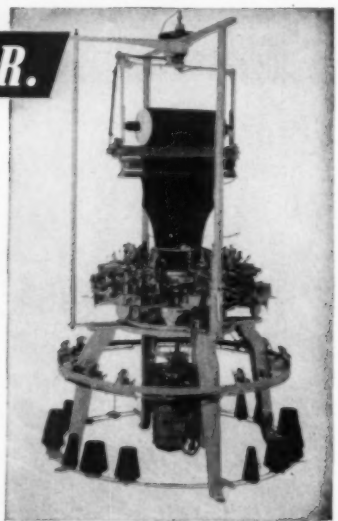
AURORA PUMP DIVISION
THE NEW YORK AIR BRAKE COMPANY

31 LOUCKS STREET • AURORA • ILLINOIS

EXPORT DEPARTMENT — Aurora, Illinois — Cable Address "NYABINT"

ALL NEW...

TOMPKINS S-1 JR.



MAKES THE MOST PERFECT CLOTH POSSIBLE

HERE'S A TYPICAL EXAMPLE...

Model S-1 Junior making fleece with 400-lbs. of Carter 26's and 8's —five feeds, 18" cylinder, running time 68-turns per minute . . .

- **MINIMUM OF IMPERFECTIONS AND BROKEN NEEDLES**

You can produce any class of cloth in the wide range of circular spring needle knitting—in greater quantity, with less waste and less needle breakage—on the New S-1 Junior! It gives you the proven Tompkins system in fully modern form . . . with triple stop motions, furnishing wheels, new gearless drive, automatic oiler and air cleaner! Get the full story now . . . be among the first to profit!

TOMPKINS BROS. CO.

623 ONEIDA ST. • SYRACUSE 4, N. Y.

Makers of Circular Spring and Latch Needle Knitting Machinery...Since 1846

Co., 1088 Ivanhoe Rd., Cleveland 10, Ohio. The motors are for indoor and outdoor installations and come with normal-thrust bearings in 1- to 40-hp. sizes; motors with high-thrust bearings are available in 1 to 15 hp.

Circle T-27 on Reader-Service Card

Lift Truck Attachment

Yale & Towne Mfg. Co., 11,000 Roosevelt Blvd., Philadelphia 15, Pa., has announced the development of a heavy-duty, dual-purpose rotating attachment that will permit a lift truck to double as a standard fork truck and a bale handler.

Circle T-28 on Reader-Service Card

Teflon-Insulated Wire

Teflon-coated silver-plated copper hook-up wire in sizes 16 to 28 is available from Haveg Industries, Inc., 900 Greenbank Rd., Wilmington 8, Del.

Circle T-29 on Reader-Service Card

Multipurpose Grease

A multipurpose grease for conditions of high and low temperatures, action of water, high-speed bearing action, and long storage is available from Gulf Oil Corp., 1822 Gulf Bldg., Pittsburgh 30, Pa.

Circle T-30 on Reader-Service Card

Clinch Nuts

Clinch nuts employing the Nylok self-locking principle are available in a wide range of ferrous and nonferrous materials and in sizes down to number 0 from the Nylok Corp., 611 Industrial Ave., Paramus, N. J.

Circle T-31 on Reader-Service Card

Machine Tap

A stub tap designed especially for use in screw machines is announced by Pratt & Whitney Co., Inc., Hartford 1, Conn.

Cidcle T-32 on Reader-Service Card

Motor-Generator Sets

Fifty-kilowatt, 400-cycle motor-generator sets that meet Air Force regula-

They look better...sell better!

Upholstery and Drapery Fabrics

touched with the luxury of glittering

FAIRTEX® YARNS

Metallized Mylar* • Metallic • Supported Metallic

... for **lustre that lives** for the life of the fabric!

Fairtex with Foil or Metallized Mylar* or Fairtex Butyrate Metallic yarns woven into your upholstery and drapery fabrics add the luxury look! They look better and sell better because the vibrant beauty of Fairtex Metallics stops the eye and starts the sale! Fairtex Yarns are non-tarnishing and can be safely washed, dry-cleaned or scoured. As "soft-as-silk" to the touch, they are smooth, pliable and uniform and do not flake or break. Fairtex Yarns never lose their glittering glamour and outlast even the fabric itself!

FAIRTEX® YARNS

Metallized Mylar* • Metallic • Supported Metallic

*Registered Trademark for Dupont's Polyester Film

FAIRTEX CORPORATION — CHARLOTTE, N. C.

CHICAGO: William Napier, 3555 Peterson Avenue
NEW YORK: Robert Napier, 51 E. 42nd. Street
CHARLOTTE: Lanier Branson, Jr., and J.E. MacDougall, Jr., 1808 Liberty Life Bldg.
PHILADELPHIA: William A. Papp & Associates, 3701 N. Broad Street

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SERVICE *that satisfies*

FROM OUR STOCKS

With large stocks at Providence and Greenville, our usual procedure is to anticipate your requirements so that your order can be shipped consistently from stock.

U. S.
RING TRAVELER CO.
159 ABORN STREET, PROVIDENCE, R. I.
Southern Warehouse: 1443 Augusta St., Greenville, S. C.

FROM OUR REPS

R. V. BORDEN, W. H. ROSE—Greenville, S. C.—Box 1048—CEdar 3-0915
O. B. LAND—Athens, Ga.—Box 1187—Liberty 6-1647
L. H. MELLOR, JR.—Mid-Atlantic States—123 Tready Rd.—Drexel Hill, Pa.—Phone Hilltop 6-1553
H. R. FISHER—Concord, N. C.—Box 83—STate 2-1640
H. J. SMITH—Providence—Box 1187—Gaspee 1-0100

NASH

. . . With The Famous No. 79
AUTOMATIC QUILL POLISHER

—protects product quality by preventing damage to fabrics and delicate filaments due to rough quills and broken picks. Cleans, buffs, and polishes loom bobbins at speeds up to 40 pieces per minute.

Send for illustrated brochure with complete information.

NASH

J. M. NASH *Company, Inc.*
2364 North 30th Street • Milwaukee 10, Wisconsin
SPECIAL FINISHING MACHINES SINCE 1890

tions as WD-4 power units are made available for commercial use by Electric Machinery Mfg. Co., Minneapolis 13, Minn.

Circle T-33 on Reader-Service Card

Plastic Ducts and Hoods

Corrosion-resistant plastic fume ducts and fume hoods are announced by Ceilcote Co., Inc., 4924 Ridge Rd., Cleveland 9, Ohio. The ducts and hoods can be produced in virtually any required shape.

Circle T-34 on Reader-Service Card

Humidifier

A small humidifier with automatic control for use in offices, conference rooms, etc. has been developed by Armstrong Machine Works, Three Rivers, Mich.

Circle T-35 on Reader-Service Card

Brake Motors

Brake motors that stop instantly and hold heavy loads are announced by Reliance Electric & Engineering Co., 1088 Ivanhoe Rd., Cleveland 10, Ohio. When power failures occur, dead-man operation holds the load until normal operation is restored.

Circle T-36 on Reader-Service Card

Pin-Bolt Drives

J. D. Polis Mfg. Co., 2900-20 W. 26th St., Chicago 23, Ill., announces its Bulldog pin-bolt drives for anchoring installations of electrical, plumbing, heating, and air-conditioning equipment.

Circle T-37 on Reader-Service Card

Sparkproofing Kit

An electrical sparkproofing kit for use on gasoline engines in areas where fumes are present is offered by Lamson Mobilift Corp., Portland, Ore., for each of its models of industrial trucks.

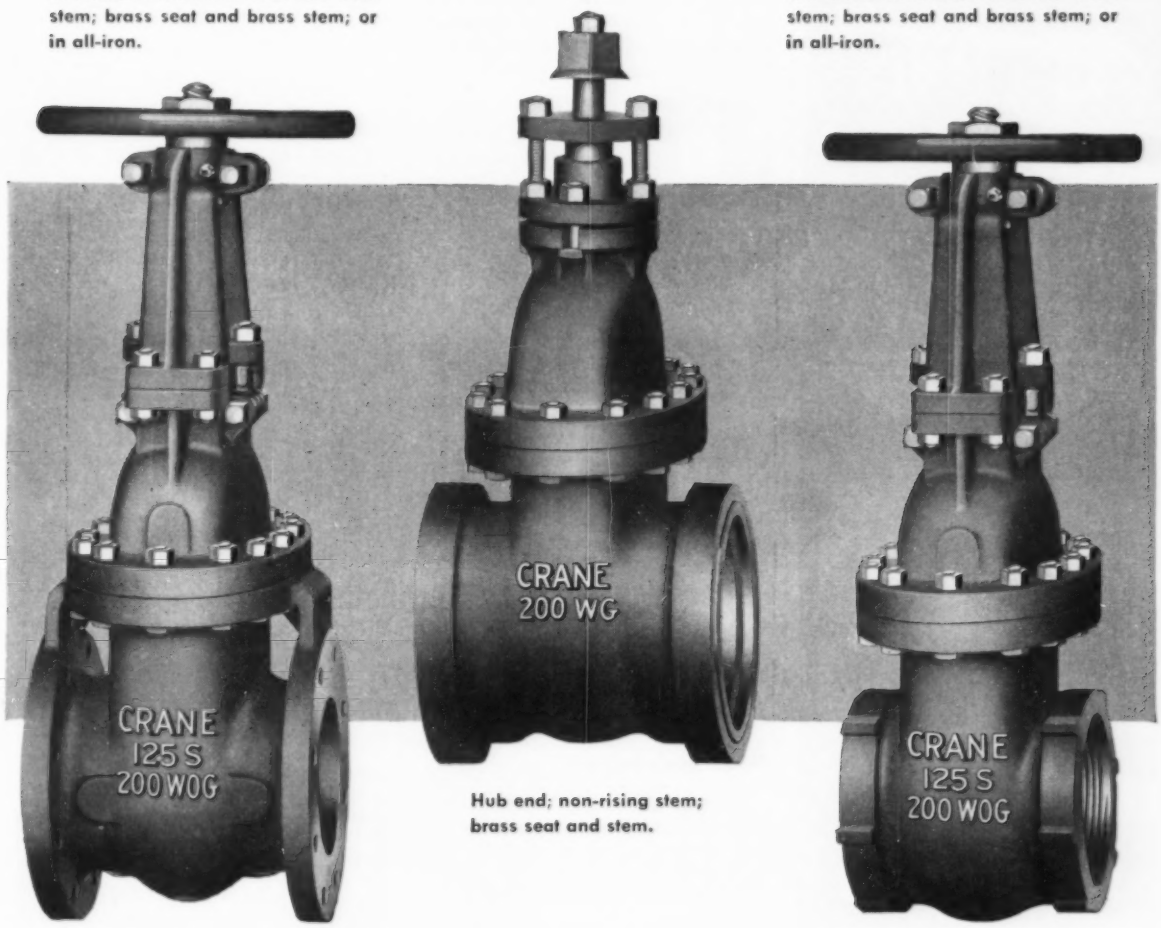
Circle T-38 on Reader-Service Card

Towel Dispenser

Designed to minimize loss and pilferage of shop towels, a machine that

Flanged end; outside screw and yoke. Available with brass seat and steel stem; brass seat and brass stem; or in all-iron.

Screwed end; outside screw and yoke. Available with brass seat and steel stem; brass seat and brass stem; or in all-iron.



Hub end; non-rising stem; brass seat and stem.

Crane Iron Body Gates–Versatile Valves for Textile Industry Services

Look to Crane for better performing 125-pound iron body wedge gate valves. Improved design gives them greater strength and important operational advantages. As a result, these valves offer dependable performance on a wide variety of services . . . easy maintenance . . . long life.

Among the advantages of Crane iron body wedge gates are:

- *Oval body and bonnet*, with extra metal where needed most.
- *No bonnet joint leakage*—More bonnet bolts on closer centers insure uniform bolt load distribution on bonnet joint and gasket.
- *Long disc guides* seat discs properly . . . minimize drag on seating surfaces . . . prolong valve life.
- *Shoulder-type seat rings* prevent rings from loosening in service.
- *Two-piece ball-type gland* prevents binding on stem even when gland bolt nuts are pulled up unevenly.
- *Exceptionally deep stuffing box* can easily be repacked under pressure when valves are wide open.
- *Available in 19 sizes*—2 inches to 48 inches—all-iron or brass trimmed. In addition, Crane makes companion valves in globe, angle, check, quick-opening and Underwriters' patterns.

For complete descriptions of Crane iron body gate valves, consult your Crane Representative, or write to Crane Co. at the address shown below.

CRANE VALVES & FITTINGS

PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas

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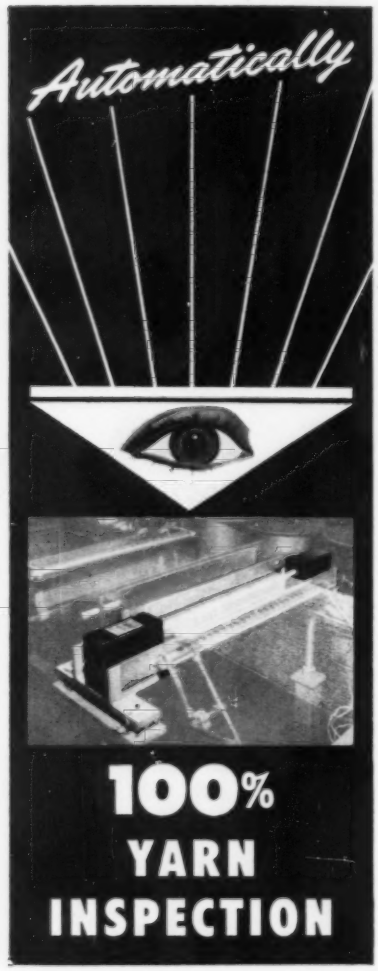


...with the Lindly Automatic Yarn Inspector

Take **all** the guesswork out of yarn inspection with the new standard of yarn quality—THE LINDLY COUNT.

The Lindly Automatic Yarn Inspector counts **every** fault... provides a stop motion, set to **your** tolerances. You determine quality, measure it in terms of THE LINDLY COUNT.

Lindly Automatics pay for themselves in a short time, go on adding to your profits for years.

Inquire about the family of Lindly Automatics, built to cut your costs, boost your quality.

It Pays to Know LINDLY the Lindly Count

LINDLY & COMPANY, INC.
248 HERRICKS ROAD
MINEOLA, NEW YORK

dispenses clean towels in bundles of 5 or 10 as soiled towels are put back into it is announced by Industrial Wiping Cloth Co., Inc., 29-28 41st Ave., Long Island City 1, N. Y.

Circle T-39 on Reader-Service Card

Flow Indicator

A combination-header and toggle-valve indicator for tight shutoff that will indicate leakage flows is available from George W. Dahl Co., Bristol, R. I.

Circle T-40 on Reader-Service Card

Gravity-Feed Oiler

A special reservoir built into the oiler that automatically floods the bearing with a fixed amount of lubricant is a feature of the Kwik-Flush line of industrial oilers made by Trico Fuse Mfg. Co., 2948 N. 5th St., Milwaukee 12, Wis.

Circle T-41 on Reader-Service Card

Floor Maintainer

A lightweight floor machine with interchangeable attachments for waxing, scrubbing, polishing, and buffing is available from Clarke Sanding Machine Co., Muskegon, Mich.

Circle T-42 on Reader-Service Card

Overhead Carrier

An enclosed air-conditioned overhead carrier with a capacity of 3,100 lbs. and speeds to 300 ft. per min. is announced by Cleveland Tramrail Div., Cleveland Crane & Engineering Co., Wickliffe, Ohio.

Circle T-43 on Reader-Service Card

Vacuum Cleaner

A wet and dry pick-up vacuum cleaner that features a bypass motor for protection against moisture is available from Ace Co., Ocala, Fla.

Circle T-44 on Reader Service Card

Gas Welding Equipment

Aluminum, stainless steel, chrome steel, nickel, copper, brass, and alumi-

Your nearby H & D sales office is listed in the yellow pages. Phone for fast corrugated box service.

HINDE & DAUCH
Division of West Virginia Pulp and Paper Company

All-purpose liquid detergent

Mop it on...

Cindet

Let Cindet suds lift the dirt for you

CINDET does more cleaning with less effort and less material; works in hard or soft water.

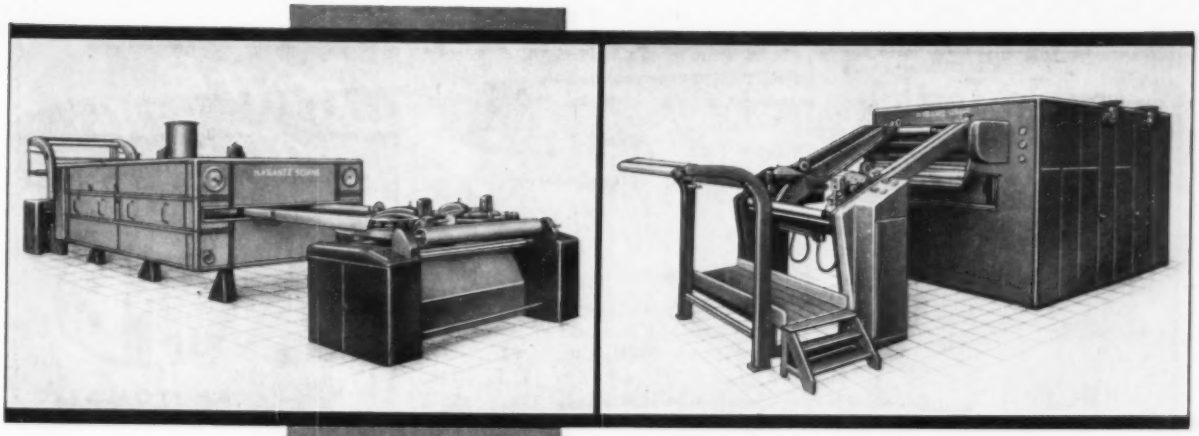
CINDET outstrips them all as a wax stripper. Cleans walls, woodwork, tile, porcelain, glass, metal.

CINDET does a cleaner job—cuts labor costs: Mop it on, walk away, come back and pick it up.

CINDET does the job with no drag because dirt particles shatter, lift and ride high.

For free sanitary survey of your premises ask your Dolge Service Man

DOLGE
WESTPORT, CONNECTICUT



Original KRANTZ Finishing machinery again available in the U.S.A.

KRANTZ HIGH SPEED SINGLE LAYER TENTER FRAMES
KRANTZ HIGH OUTPUT MULTI-TIER STENTERS WITH NOZZLE DRYING

These machines guarantee absolute reliability, high output at lowest cost, perfectly even drying over the whole width of the fabric, highly efficient air circulation without harming the fabric, efficient cooling of the cloth, direct access to the fabric, the chain rails and the filters.

These features have been recognized by many progressive mills and proven in numerous installations all over the world.

Catalogues, full description and specifications, quotations furnished without obligation.

H. KRANTZ SOEHNE - AACHEN/WEST GERMANY
Multi-tier, single layer stenters — carbonizing plants, roller presses — press papering machines

H. KRANTZ - AACHEN/WEST GERMANY
Raw stock and yarn dyeing and bleaching machines — hydro-extractors

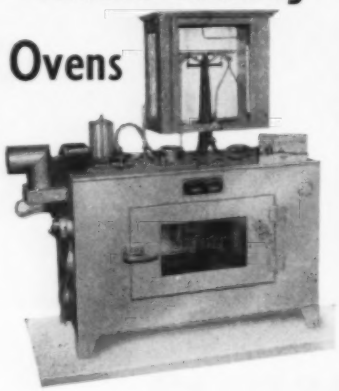
Represented in the U. S. A. by:

ERNEST L. FRANKL ASSOCIATES, 515 Madison Avenue, New York 22, N. Y.

A multi-tier tenter will be exhibited at the next Hanover Fair April 27th–May 6th 1958

For more data, write this page number on Reader-Service card. →

Textile Testing Ovens



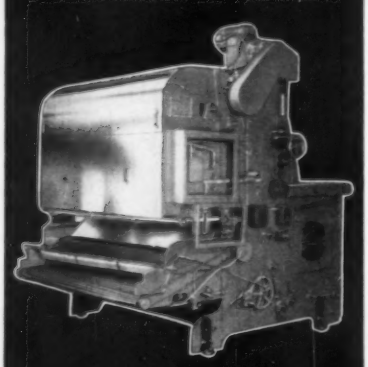
EMERSON OVENS

For accurate testing of water content in yarn, small wool samples and other textile material. The 8 Basket Oven, shown above, can be furnished with 8 baskets 3" sq. x 6" deep or 6 basket 4½" sq. x 6" deep, complete with weighing balances, sensitive to 3 mg., weights, and automatic temperature control. Table space 20" x 40".

Details of other style Ovens with specially designed baskets to handle YOUR TESTING PROBLEM on request.

EMERSON APPARATUS CO.
177 Tremont St. Melrose 76, Mass.

Geo.S.HARWOOD & Son



SPECIALISTS IN TEXTILE FEEDING MACHINERY SINCE 1863

50 LAGRANGE STREET
WORCESTER 8, MASS.

num bronze can be cut by a process developed for use with its Aircomatic welding equipment, according to Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N. Y.

Circle T-45 on Reader-Service Card

Wrench

A wrench available in three sizes to fit all sizes of Flexco nuts is announced by Flexible Steel Lacing Co., 4607 Lexington St., Chicago 44, Ill. The wrenches fit into a regular carpenter's brace.

Circle T-46 on Reader-Service Card

Dual-Spindle Lathe

Designed for both large-diameter and small-diameter work, a dual-spindle lathe is announced by Bove & Emmes Machine Tool Co., 81 Caldwell Dr., Cincinnati 16, Ohio.

Circle T-47 on Reader-Service Card

Heavy-Duty Pump

A constant-displacement pump designed for heavy-duty, continuous 3,000- to 5,000-psi. operation requiring 3 to 10 hp. is announced by The Oilgear Co., 1560 W. Pierce St., Milwaukee 4, Wis.

Cirle T-48 on Reader-Service Card

Automatic Filtration

Automatic air filtration and once-a-year maintenance in its line of heaters ventilators, and air conditioners is announced by American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.

Circle T-51 on Reader-Service Card

Lift Truck

A 7,000-lb.-capacity pneumatic-tire lift truck that is compact enough to work inside a single-door boxcar is announced by Hyster Co., 2902 N.E. Clackamas St., Portland 8, Ore.

Circle T-52 on Reader-Service Card

Tractor Drive

The high-torque drive principle used in railroad switch engines has been in-

CONTINUED ON PAGE 192

GREATER PROTECTION to your AIR LINE!

M-B

AUTOMATIC WHIRL-A-WAY
AIR LINE FILTER
MODEL W-1
and **TRAP**

RIBBON TYPE FILTERING UNIT removes solids .00039 and larger. Transparent plastic bowl makes filtered foreign matter visible. Gives maximum protection to all types of Lint blowers, Blow-off Hoses and various air-operated controls.

The TRAP ejects water automatically. Operates upon accumulation of 3 to 4 ounces. Discharges in less than 5 seconds. Assures dry air in pneumatic system at all times. Non-corrosive throughout.

M-B PRODUCTS
46 VICTOR AVE., Div. 16
DETROIT 3, MICHIGAN

Men on the Move

Now available in a *new edition*... with *new figures.*

This popular booklet points up the important sales problem of personnel turnover in industry. Out of every 1,000 key men (over a 12-month period) 343 new faces appear . . . 65 change titles . . . 157 shift . . . and 435 stay put. These figures are based on average mailing address changes on a list of over a million paid subscribers to McGraw-Hill magazines.

Write us for a free copy

Company Promotion Department
McGraw-Hill Publishing Co., Inc.
330 West 42nd Street,
New York 36, New York

MECHANIZE all Scrubbing Operations into 1

with a COMBINATION SCRUBBER-VAC!

Applies cleanser, scrubs, flushes, and picks up—in ONE operation!

(Powder Dispenser and Level Cable Wind are accessories)

Here's a timely answer to the need for reducing labor costs—*a single cleaning unit that completely mechanizes scrubbing.* A *Combination Scrubber-Vac* applies the cleanser, scrubs, flushes if required, and picks up (damp-dries the floor)—*all in one operation!* Maintenance men like the convenience of working with this single unit... the thoroughness with which it cleans ...and the features that make the machine simple to operate. It's *self-propelled,* and has a *positive* clutch. There are no switches to set for *fast* or *slow*—slight pressure of the hand on clutch lever adjusts speed to desired rate. The powerful vac performs quietly.

Finnell's 213P Scrubber-Vac at left, an *electric* unit for heavy duty scrubbing of large-area floors, has a 26-inch brush spread. Cleans up to 8,750 sq. ft. per hour (and more in some cases), depending upon condition of the floors, congestion, et cetera. (The machine can be leased or purchased.) *Finnell* makes a full range of sizes, and *gasoline* or *propane powered* as well as *electric* models. From this complete line, you can choose the size and model that's exactly right for *your* job (no need to *over-buy* or *under-buy*). It's also good to know that *a Finnell Floor Specialist and Engineer is nearby* to help train your maintenance operators in the proper use of the machine and to make periodic check-ups.

For demonstration, consultation, or literature, phone or write nearest *Finnell Branch* or Finnell System, Inc., 1904 East St., Elkhart, Ind. Branch Offices in all principal cities of the United States and Canada.

FINNELL SYSTEM, INC.

Originators of Power Scrubbing and Polishing Machines

Everything FINNELL for Floor Care

BRANCHES IN ALL PRINCIPAL CITIES

For more data, write this page number on Reader-Service card. →

Stainless Steel Assures

NEW IDEA FOR TEXTILE MANUFACTURERS faced with high space and equipment costs. It's BILD-A-FLEX, the new slotted construction angle designed and engineered by Republic's Berger Division. Versatile, durable, unlimited in application. Use it as "metal lumber". Simply (1) plan your assembly, (2) cut BILD-A-FLEX, (3) join with bolts. These three steps quickly and economically convert ideas into equipment, such as racks, benches, shop desks. A unique pattern of short slots allows complete flexibility and assures sufficient bolts in bearing to give adequate joint strength. BILD-A-FLEX is bonderized and finished with baked enamel. Ten angles per bundle, light or heavy gage, 10- or 12-foot lengths, with hardware. Bundle stores in same space as one 2″ x 4″ piece of lumber. Send coupon for idea-packed catalog today.

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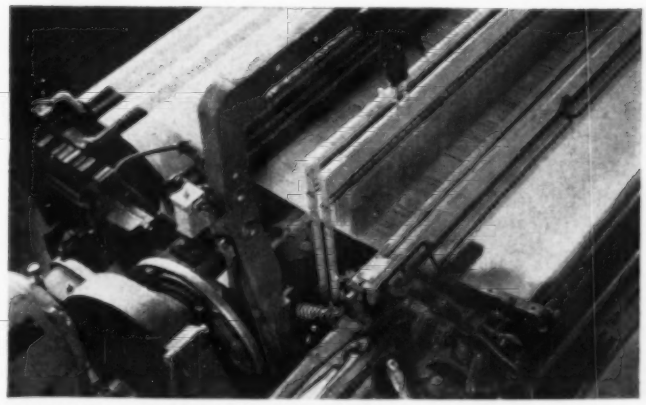
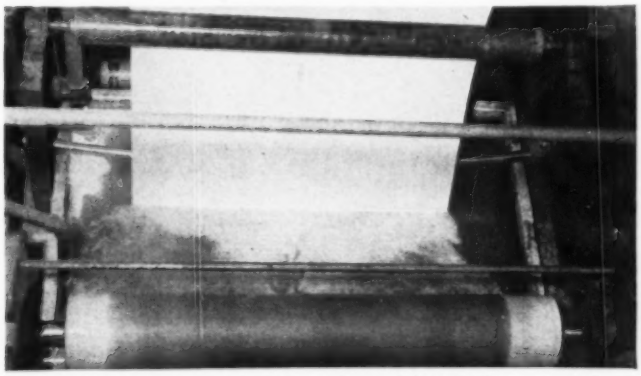
Pure Matched Whites



ASSURANCE OF UNIFORMITY AND CONCENTRICITY are reasons why textile equipment manufacturers specify Republic ELECTRUNITE® Mechanical Tubing. Above, ELECTRUNITE is used for stop motion bars on looms made by Bahan Textile Machinery Company, Greenville, S.C. Carefully rolled flat steel, carbon or stainless, can be inspected on both sides, then formed into a cylindrical shape that's electrically welded for uniform strength. The result is uniform tubes in every dimension, every contour. Send coupon for complete facts on ELECTRUNITE.



PURE MATCHED WHITES ARE ASSURED in equipment fabricated from ENDURO Stainless Steel. Note the whiteness of the fabric coming out of this stainless steel saturator used for open-width goods in the continuous steam bleaching process at Dan River Cotton Mills, Danville, Virginia. Stainless also assures minimum maintenance, easy cleanability, long life.

The reason? Republic ENDURO Stainless Steel stubbornly resists rust and corrosion. It is non-contaminating. It is inert to the chemical concentrations used in the continuous peroxide bleaching process. In fact, stainless steel made possible the continuous bleaching process.

ENDURO eliminates the costly problem of corrosion and metallic contamination eating into profits. It eliminates premature decomposition of solutions and chemical loss. It eliminates danger of stained and unevenly bleached textile products. ENDURO assures batch after batch of pure matched whites.

Equipment fabricated from ENDURO Stainless Steel starts paying off the moment it is placed in operation. It produces immediate savings in maintenance and cleaning costs. Produces long-range savings in extended equipment life.

You can be enjoying the advantages of faster production, lowered costs and higher product quality now. Your equipment supplier has all the facts on ENDURO Stainless Steel, the metal that cuts costs, protects, lasts, and lasts. Contact him, or send us the coupon.

This example of the advantages of stainless steel is brought to you by Republic Steel in behalf of the stainless steel equipment manufacturers and the Republic Stainless Steel distributors—your local steel service centers.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. TW-5112
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO
Send more information on:
- ☐ ENDURO® Stainless Steel
- ☐ BILD-A-FLEX Construction Angles
- ☐ ELECTRUNITE Mechanical Tubing

Name_____ Title_____
Company_____
Address_____
City_____ Zone____ State_____

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NOW—CHECK ACCURACY WHILE YOU CHECK MOISTURE!

New Electronic Moisture Registers have first "built-in standard" in a 3-second, portable moisture tester.

NOW DIAL ACCURACY IS ASSURED, even under the extremes of production-line use. With *self-checking standard*, Moisture Register's new Model 5's are checked and adjusted for calibration accuracy right on the job—by any untrained operator. He simply fits electrode to standard. Then with new trimmer he sets dial for perfect alignment. Gives calibration adjustment *in the field*. You get practical accuracy down to 0%... 3-second spot tests for moisture wherever your product may be. Portable, light weight, battery operated, new rugged construction with miniature tube. Factory-set to your needs.

For faster testing of—

- Wool, Cotton, Rayon, Nylon, Dacron, Orlon—practically any textile.
- Yarn: cones, beams, skeins.
- Fabrics: loose or compressed.

SEND FOR NEW TECHNICAL DATA and information on 2-week free trial.

ELECTRONIC MOISTURE REGISTER Instruments

Moisture Register Company, Dept. TW
P. O. Box 910, Alhambra, California
Please send data on new Model 5's.

We are testing _____
in moisture range from _____% to _____%
Firm _____
By _____ Title _____
Address _____
City _____ State _____

Seven Check Points for V-Belt Drives

When you're losing revolutions per minute on V-belt drives, here are seven check points with illustrations to help you diagnose and correct the trouble.

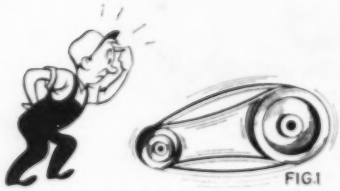


FIG.1

1. Wrong Belt Tension. Run the drive at full speed and adjust the take-up until only a slight bow appears on the slack side of the belts.

2. Sheave Wear. A badly worn sheave robs the belt of its wedging action.

FIG.2

FIG.3

3. Excess Oil. Keep oil in the machine; not on the V-belts. But if you can't avoid oil, use special belts for the oily application.

4. Underbelted. Too few belts may mean that you cannot maintain tension to carry your load. Underbelting of 20% robs you of 60% of belt life.

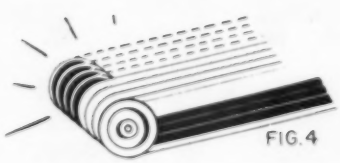


FIG.4

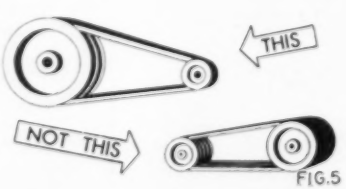


FIG.5

5. Mismatched Small Sheave. The diameter of the small sheave may not give enough wrap to pull your load.

See how you save with the "SCOTCH" Brand

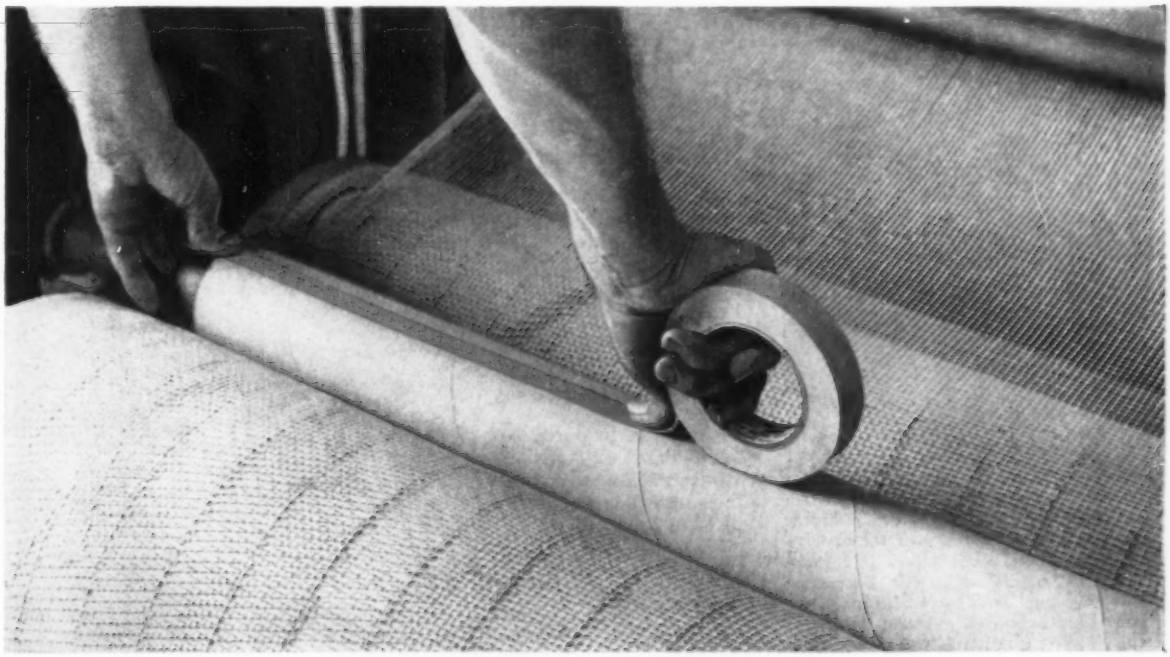
Tape that sticks on both sides

Quick, sure way to start a wind of cloth on the roll: place a strip of "SCOTCH" Brand Double-Coated Tape lengthwise or around the empty tube . . . press end of cloth against the tape . . . the wind is started! "SCOTCH" Brand Double-Coated Tapes give you *two* sides of the strongest adhesive on any double-coated pressure-sensitive tape. They make a quick, sure, and *mess-proof* way to handle dozens of holding, fastening, and splicing jobs in a textile mill.

And this is only one of the more than 300 tapes in the "SCOTCH" Brand line. Among others are tapes as strong as steel . . . tapes in a rainbow of colors . . . tapes that can be printed on . . . tapes that resist acids, alkalies, and solvents. Together, "SCOTCH" Brand Tapes make up the world's most complete line of pressure-sensitive tapes for textile mill use. That's why you get the *right* tape for every need when you specify "SCOTCH" Brand.

For complete information, including facts on "3M-MATIC" taping and dispensing methods, send for free illustrated booklet, " 'SCOTCH' Brand Tapes for the Textile Industry." Write: 3M Co., 900 Bush Ave., St. Paul 6, Minn., Dept. PZ-48.

"SCOTCH" is a registered trademark of 3M Co., St. Paul 6, Minn.



When tape costs so little, why take less than

REG. U.S. PAT. OFF.
SCOTCH BRAND **Tapes for the textile and apparel industries**

MINNESOTA MINING AND MANUFACTURING COMPANY
. . . WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

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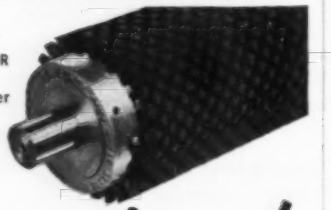
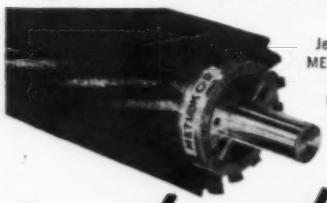
"a brush

Jenkins' METLKOR Nylon Furnisher Brush



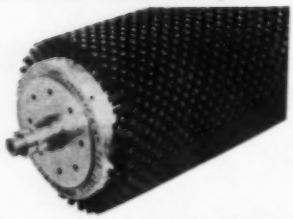
is a brush



Jenkins' METLKOR Nylon Drying Brush

is a brush"

Jenkins' METLKOR Brushing Machine Brush



Poetically speaking, true, but there's no brush like a Jenkins' METLKOR Brush. Textile Mill men everywhere say it's true. There are "Look-Alikes", "Just-as-Goods", "Steals", "Terrific Bargains" but only one Jenkins' METLKOR. They are built better to perform better to last longer. Result . . . Improved product, greater satisfaction and economy.

Specify Jenkins' METLKOR the original . . . the best *Metal Core* brush

METLKOR®
CYLINDER BRUSHES
and **LIFEWOOD®** WOOD BACKED BRUSHES

M. W. JENKINS' SONS, INC.
— *Serving Industry for 80 Years* —
431 Pompton Ave., Cedar Grove
Essex County, N. J. • CEnter 9-5150

FIG.6

6. **Uneven Sheaves.** If groove depths and widths aren't uniform in your sheaves, you may have some loafers in your V-belts. Put them to work with new sheaves.

7. **Poorly Matched V-Belts.** Slack belts just ride along while tight belts do the work. *Worthington Corp.*

FIG.7

EQUIPMENT & SUPPLY NEWS

CONTINUED FROM PAGE 186

corporated in its Model GLT Dynamotive four-wheel tractor by Automatic Transportation Co., Chicago 20, Ill.

Circle T-53 on Reader-Service Card

Industrial Pumps

A line of close-coupled industrial pumps is announced by Layne & Bowler Pump Co., 2943 S. Vail Ave., Los Angeles 22, Cal.

Circle T-54 on Reader-Service Card

Threading Machines

A line of four threading machines, all of the same basic design but with different types of die heads and work holders, is being offered by Oster Mfg. Co., Wickliffe, Ohio.

Circle T-55 on Reader-Service Card

Volt-Ammeter

A snap-around type volt-ammeter called the RS-1 amprobe has been introduced by Pyramid Instrument Corp., Lynbrook, N. Y.

Circle T-56 on Reader-Service Card

Power Battery

A new type of armored porous tubing increases the rated capacity of its Exide-Ironclad power truck battery by 44%, according to Exide Industrial Div., Electric Storage Battery Co., Box 8109, Philadelphia 1, Pa.

Circle T-57 on Reader-Service Card

Blower Attachment

An attachment for its portable electric blower converts it into a limited-capacity tank-type industrial vacuum cleaner, according to the manufacturer, Ace Co., Orlando, Fla.

Cirle T-58 on Reader-Service Card

Smoke Indicator

A smoke indicator for boilers that uses a photoelectric cell and translates the smoke density to a meter reading is available from Brooke Engineering Co., Inc., 4517 Wayne Ave., Philadelphia 44, Pa.

Circle T-59 on Reader-Service Card

Variable-Speed Motor

Variable-speed electric motors with reducers for severe radial-load duty have been developed by Sterling Electric Motors, Inc., 5401 Telegraph Rd., Los Angeles 22, Calif.

Cirle T-60 on Reader-Service Card

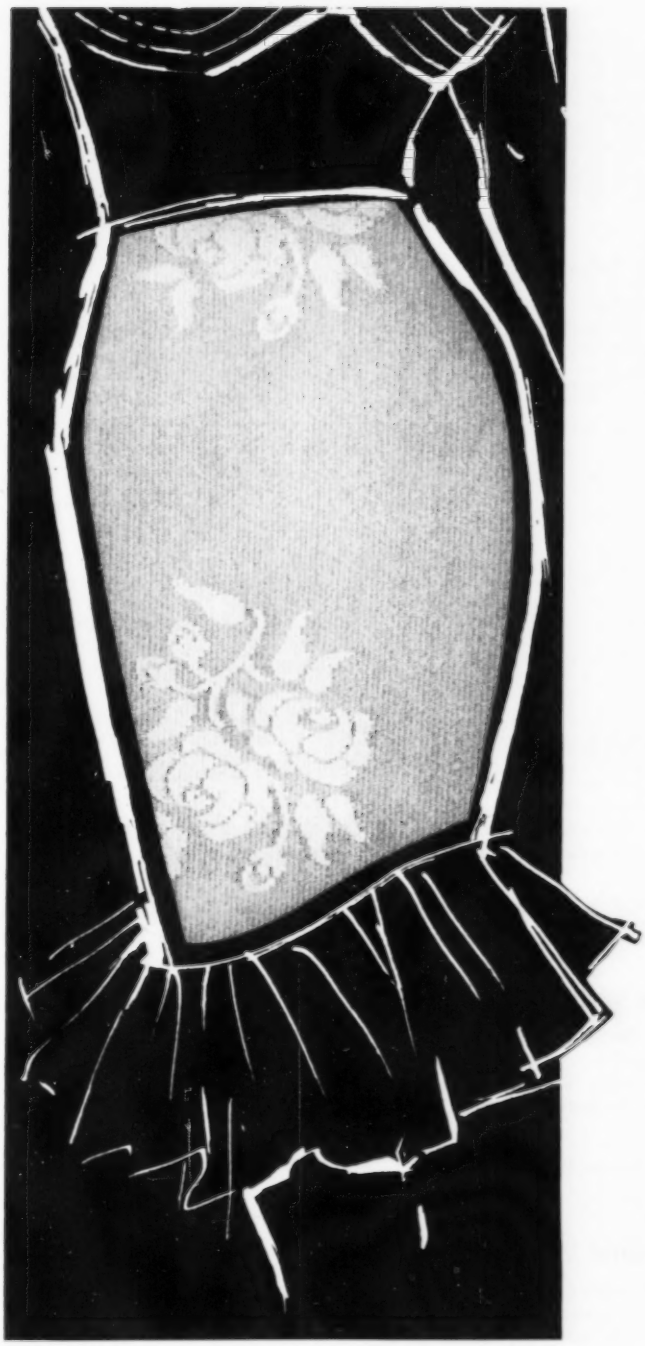
Automatic Lubrication

A constant-level electro-oiler developed by Oil-Rite Corp., 2301 Waldo

TEST RESULTS PROVE:

the good word in girdles

is ACETATE



The facts are in. Three months of special testing prove acetate gives *performance* plus beauty to girdle panels.

For ninety days acetate and rayon panel girdles—selected from existing lines—were consumer tested. Each garment was washed and worn an equal number of times. THE ACETATE GARMENTS SHOWED LESS PUCKER, NO ABRASION, AND OUTLASTED THE POWER NET OF THE GARMENT.

Shown at left is an acetate warp jacquard by Rosenstein Bros.—typical of the rich constructions possible with acetate. Its white resists yellowing and graying. It dries quickly. It looks good for the life of the garment.

Let us show what has been done and can be done with acetate. Today.

Celanese Corporation of America, Textile Sales Division, Charlotte, North Carolina.

Celanese®

District Sales Offices:

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New York 16, N. Y.

Room 10-141 Merchandise
Mart, Chicago 54, Illinois

P. O. Box 1414
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200 Boylston St.
Chestnut Hill 67, Mass.

819 Santee St., Los Angeles, California

Export

Amcel Co., Inc. and
Pan Amcel Co., Inc.

180 Madison Ave.
New York 16, N. Y.

In Canada

Chemcell, Canadian
Chemical & Cellulose Co., Ltd.

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Montreal

...a Celanese contemporary fiber

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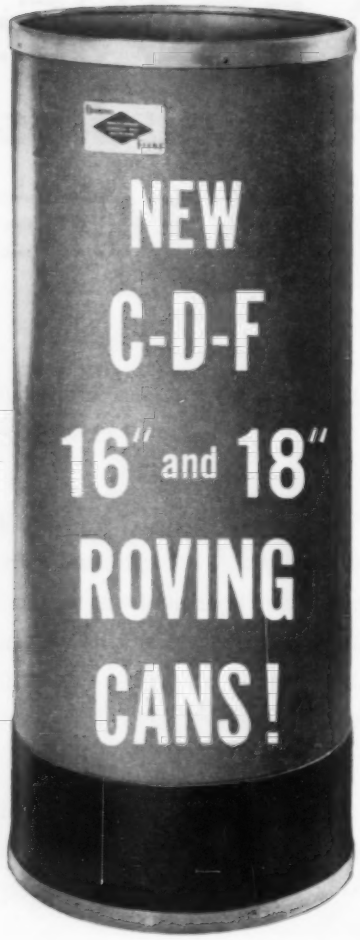


SEAMLESS!
SNAG-FREE!

Now you can get Diamond Fibre Roving Cans in the big 16" and 18" diameters from regular stock at the Spartanburg plant-warehouse.

Static-free rolled fibre top rim for running synthetics; one-piece steel top rim; or swedged top rim—these meet all roving requirements.

CDF Diamond Fibre Roving Cans are smooth, strong, long-lived. Their interior surface, like porcelain, resists cracking and softening—won't snag yarns.

Make the CDF Spartanburg warehouse (834 Hayne Street, Spartanburg, S.C.—Tel. 3-6397) your headquarters for fibre and Celoron loom parts, gears, trucks, and mill boxes. Call Spartanburg or write for CDF Receptacles Catalog.

CDF **CONTINENTAL-DIAMOND FIBRE**
A Subsidiary of The Budd Company
Newark 55, Del.

Blvd., Mantowoc, Wis., eliminates variation in drop feeding oil in up to 24 sight feed valves. Therefore central-point automatic lubrication replaces 24 individual oil cups.

Circle T-61 on Reader-Service Card

Remote Counter

A remote integrating counter for pneumatic transmission systems has been announced by The Bristol Co., Waterbury 20, Conn.

Circle T-62 on Reader-Service Card

Concrete Patching

A compound called Super-Patch that can be easily applied to patch worn concrete floors is available from Maintenance Engineering Co., 16 W. Johnson St., Philadelphia 44, Pa.

Circle T-63 on Reader-Service Card

Spray Nozzle

A spray nozzle with a pull-out vane to simplify cleaning in hard-to-reach places is made by Spraying Systems Co., 3233 Randolph St., Bellwood, Ill.

Circle T-64 on Reader-Service Card

Pocket Comparator

A compact pocket magnifier for on-the-spot checks for linear dimensions, diameters, and angles is available from Edmund Scientific Co., Barrington 21, N. J.

Circle T-65 on Reader-Service Card

Portable Welder

Called the Model 57, a portable resistance welder constructed mainly of aluminum alloy is being produced by Ampower Products Co., Oak Lawn, Ill.

Circle T-66 on Reader-Service Card

Pilot Control Valve

A pilot control valve for use with diaphragm-actuated regulating valves that responds to small variations in controlled pressures is announced by Atlas Valve Co., 280 South St., Newark, N. J.

Circle T-67 on Reader-Service Card

Power Sweeper

Designed for use in areas where gas-operated sweepers are a danger, a noiseless electric power sweeper that will clean 30,000 sq. ft. per hr. has been developed by Modern Power Sweeper Co., 738 N. McKeever Ave., Agusa, Calif.

Circle T-68 on Reader-Service Card

Caster Brake

A wing-type wheel brake is available on 4- and 5-in. casters made by The Bassick Co., Bridgeport 2, Conn.

Circle T-69 on Reader-Service Card

Lift Table

Called the Liftable, a unit actuated by four air cylinders that can be inserted in a conveyor line or used separately to shift materials is available from Sage Equipment Co., Inc., 30 Essex St., Buffalo 13, N. Y.

Circle T-70 on Reader-Service Card

Conveyor-Belt Cleats

Cleats that are easily attached to conveyor belts and prevent gravel, wood chips, and other items from rolling or slipping on the belt are announced by Flexible Steel Lacing Co., 4607 Lexington St., Chicago 44, Ill.

Circle T-71 on Reader-Service Card

Amplifier

A line of amplifiers for motors ranging in shaft power from 1 to 50 w. is announced by Industrial Control Co., Wyandanch, L. I., N. Y.

Circle T-72 on Reader-Service Card

Cable Connector

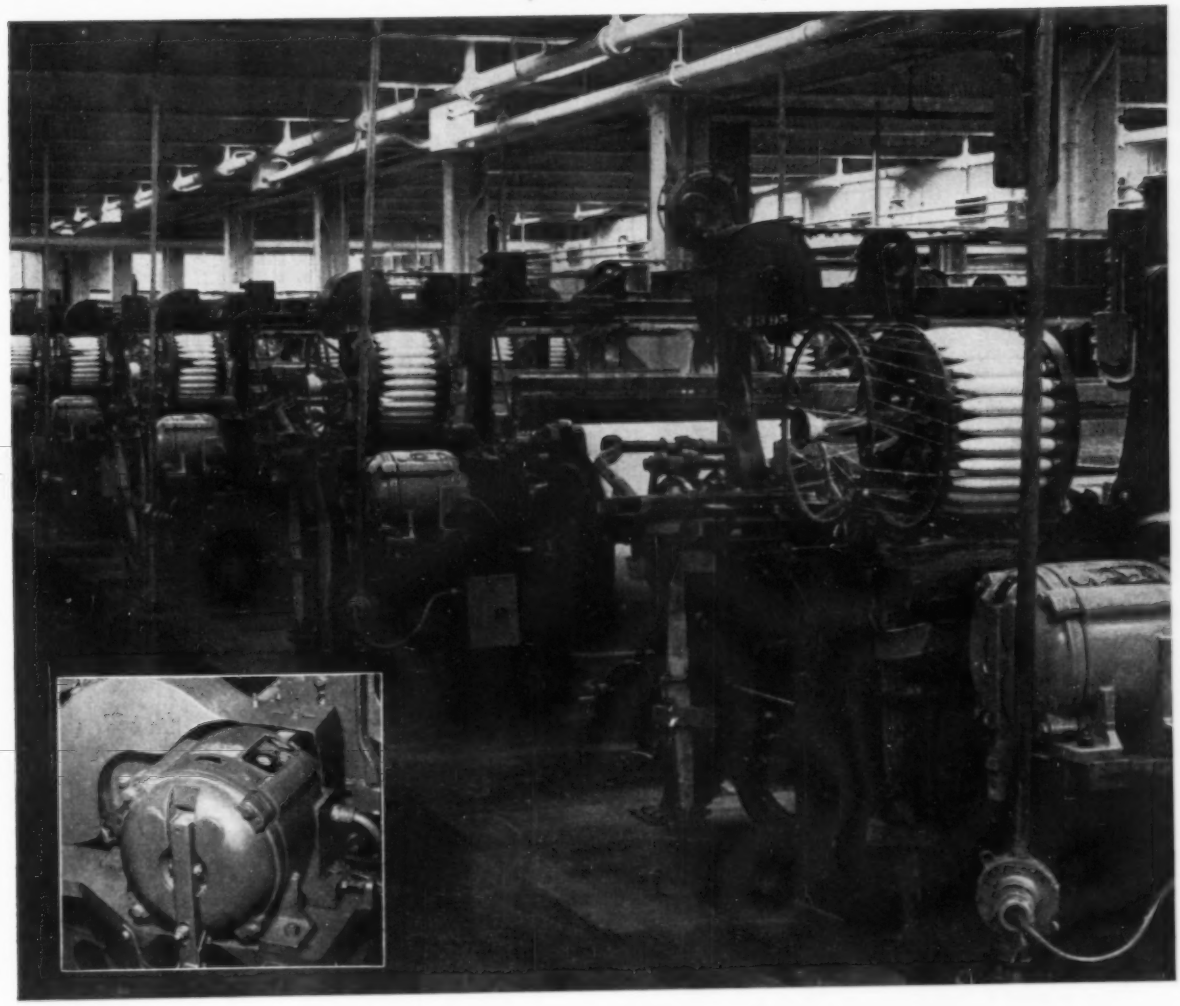
A straight connector for attaching armored cable to standard knockout boxes has been introduced by Unimatic Corp., R.F.D. 1, Caldwell, N. J.

Circle T-73 on Reader-Service Card

Caster Truck

A materials-handling truck made of Fiberglas-reinforced plastic mounted on swivel casters is available from Pearson Plastic Co., Seekonk, Mass.

Circle T-74 on Reader-Service Card



AT THE SPRINGS COTTON MILLS

DIEHL transmitters cut loom downtime

The management of The Springs Cotton Mills, Inc. is definitely interested in cutting downtime wherever and whenever possible. Therefore, in the world's largest weave room under one roof . . . in their Lancaster, S. C. mill . . . they selected DIEHL Power Transmitters to drive some three thousand looms. As a result, Springs Mills reports loom downtime due to motor failure is "most unusual."

Springs Mills people know what they want, particularly when it comes to textile mill equipment. They know first quality equipment is the key to first quality textiles. DIEHL is proud of its part in helping Springs Mills produce highest quality goods at low operating costs. DIEHL can do the same for your mill, too. Specify DIEHL Power Transmitters for your looms.

Diehl

DIEHL MANUFACTURING COMPANY
Electrical Division of
THE SINGER MANUFACTURING COMPANY
Finderne Plant, SOMERVILLE, N. J.

☐ Please send me Consolidated Motor Catalog and Price List No. 3540 TW-4

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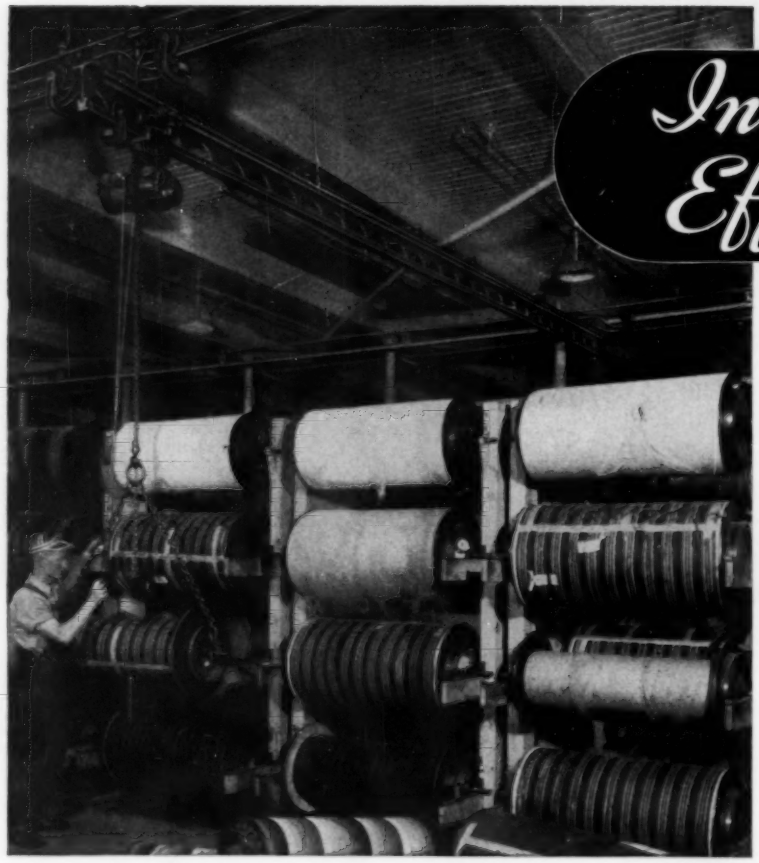

Introducing Efficiency

in the STORAGE OF BEAMS

The racks in this department store 27", 40" 44" and 60" wide warp beams. By rolling a beam to the end of the supporting rack arms, it is easily picked up without interfering with other beams.

BEAMS can be stored in very little space when a Cleveland Tramrail overhead system is used to handle them. With a proper rack layout they can be piled high and orderly and arranged for easy accessibility.

Each of the racks in the drapery cloth storage illustrated above takes eight filled beams, four on each side of a rack. There are four rows of racks with twelve racks per row. Thus a total of 384 beams can be stored in a small area. Any of the beams can be handled in and out of the racks without disturbing other beams.

A simple, inexpensive Cleveland Tramrail hand-propelled crane with electric hoist enables one man to handle the beams easily and safely. Because of the efficiency introduced the equipment pays for itself in a short period.

Cleveland Tramrail engineers will gladly cooperate with you in planning a modern beam storage arrangement and proper overhead tramrail system to serve it.

GET THIS BOOK!

BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
8462 East 287th Street, Wickliffe, Ohio

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

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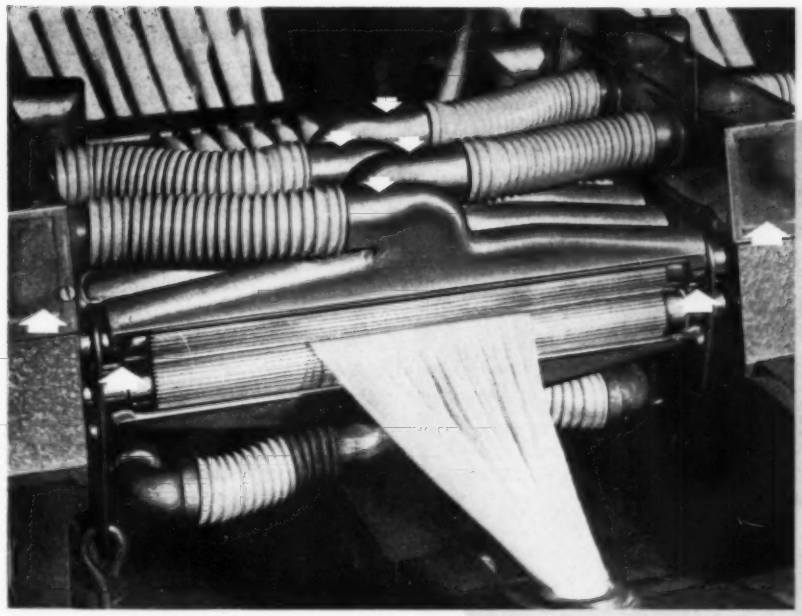

Feathertouch Drafting has Everything

Speed • Quality • Economy • Convenience

The very first of the 15,000 Ideal Feathertouch deliveries now in use were a tremendous improvement over existing systems. Progressive refinements have continuously kept them way out in front.

Speed Newer Feathertouch Drafting has been operating continuously at sustained speeds of 365 feet per minute, and much higher speeds have been maintained on test runs. Ideal patented spacing sections permit these high speeds with minimum vibration. Ideal ball bearing coiler tube mechanisms were developed to match the speed of the rest of the frame. The electro-magnetic clutch, eliminating countershaft, line pulleys and flat belting, reduced vibration to a minimum. The electric clutch, push button controls and electric stop motions permit smooth starting and instant stops without backlash.

Quality Accurate and permanent alignment and synchronization prevents bruising, cutting and shearing of stock. Floating action of the back rolls automatically evens out thick and thin places in the sliver. The fluted rolls put a permanent crimp in the stock and materially increase roving strength. By removing lint and trash, the Vacuum Cleaning System reduces slubs and gouts. Records show that Feathertouch Drafting produces sliver of highest quality.

Economy The Ideal Feathertouch Drafting System is equipped with permanently lubricated and sealed ball bearings at all turning points, reducing power and lubrication costs. All drafting rolls are hardened ground, eliminating necessity of refluting. Precision cut gearing and alternating fibre and metallic gears, result in greater per pound life of gears. Vacuum cleaning eliminates clearer picking. The highest drawing production, as offered by Ideal Feathertouch Drafting, reduces the number of deliveries required.

Convenience The New Ideal Drawing Frame is compact. Each four-delivery frame is individually driven by a 1 h.p. motor (mounted off the beam at the headend) driving the electro-magnetic clutch. Each four-delivery frame is individually equipped with the Ideal Vacuum Cleaning System, **which does not increase frame height.** All drafting parts are visible and easily accessible.

Ideal Feathertouch Drafting can be obtained as change-overs or on completely new Ideal Frames. Write for full information today.

Ideal Industries, Inc.
Bessemer City, N.C.

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with

DIXON

Saddle Guide Changeovers

Dixon Super Saddle Guide does away with oiling, practically eliminates roll picking — keeps your process clean, through Dixon design in conjunction with Rulon® (oil-free bearing material developed by Dixon). And the same creative engineering renders misalignment impossible: Unique ball and socket swivel mounting ensures that front roll and front saddle self-align automatically with bottom steel front roll. Complete ruggedly-built installation is so simple that it *costs much less* than any competitive device.

2 STEP INSTALLATION CAN SPREAD INVESTMENT

Dixon Super Saddle Guide changeovers can be installed in two steps, to spread investment: Front roll and saddle combination first; later adding middle rolls, back rolls and saddles — no parts wasted, no costly elements to throw away when installation is completed. Dixon Saddle Guide assemblies for more than 1,000,000 spindles (Duo-Roth or Casablanca type spinning) have been supplied to textile leaders like:

Carlton Yarn Mills (28,000 spdls.)
Chicopee Mfg. Corp. (272,000 spdls.)
Clinton Cotton Mills (73,000 spdls.)

as well as to original equipment manufacturers.

Write for complete data on Dixon Super Saddle Guide

DIXON CORPORATION

BRISTOL RHODE ISLAND

Southern Sales: R. E. L. Holt, Jr., and Associates, Inc., Box 1319, Greensboro, N. C. and Lawyer's Office Building, P. O. Box 321, Greenville, S. C.

Manufacturers of Drafting Devices since 1876

NEWS ABOUT SUPPLIERS

ALLIED CHEMICAL & DYE CORP., NATIONAL ANILINE DIV., Chesterfield, Va.—Is now in commercial production of 15-den. Caprolan staple. . . . **ALLIS-CHALMERS MFG. CO.**, Milwaukee, Wis.—Has appointed E. F. Greiwe manager of the Norwood Works centrifugal-pump department. . . . **AMERICAN AIR FILTER CO., INC.**, Louisville, Ky.—Has acquired Kennard Corp., St. Louis, Mo., through an exchange of common stock. . . . **AMERICAN CYANAMID CO.**, New York, N. Y.—Has announced that R. A. Olson has joined the Philadelphia, Pa., sales office of the Pigment Div. B. R. Putnam, Jr., has been appointed manager of the petrochemicals department of the Organic Chemicals Div. William D. Grafton has been named assistant to the sales manager for dyes, Organic Chemicals Div. . . . **AMERICAN ENKA CORP.**, New York, N. Y.—Has announced that C. C. Bassett, Jr., has resigned as vice president in charge of sales.

SCHOLLER BROS., INC., Philadelphia, Pa., added a fully automatic manufacturing unit to the production-research facilities (shown above) near Hammonton, N. J. Special equipment at this plant will now permit the manufacture of all types of resins for use in textiles and other fields.

AMERICAN VISCOSE CORP., Philadelphia, Pa.—Has promoted B. F. Millican to special representative for Avisco cellophane in the Atlanta, Ga., district. . . . **ARNOLD, HOFFMAN & CO., INC.**, Providence, R. I.—Has named J. Wright, Jr., to the sales staff. He will service the New York area, Connecticut, and western Massachusetts. . . . **CELANESE CORP. OF AMERICA**, New York, N. Y.—Has named H. S. Jenkins senior process-development engineer at its Charlotte Development Laboratories, Charlotte, N. C. N. L. Killibrew has been named resident sales representative in Atlanta, Ga. . . . **CHEMSTRAND CORP.**, New York, N. Y.—Has appointed F. L. Poirier Acrilan carpet-staple sales specialist.

CORN PRODUCTS REFINING CO., New York, N. Y.—Has appointed M. D. Mullin director of bulk-product sales. T. A. Bruce has been appointed assistant to the general sales manager. . . . **COTTON, McCAULEY & CO., INC.**, Pawtucket, R. I.—Has appointed J. B. Howarth representative covering North and South Carolina, handling the products of Machinecraft, Inc. . . . **CROMPTON & KNOWLES CORP.**, Worcester, Mass.—Has appointed J. H. Doyle and W. G. Hjerpe divisional sales representatives. Mr. Doyle will call on mills in Maine, eastern New Hampshire, and eastern Massachusetts. Mr. Hjerpe will cover northern New York, western Massachusetts, eastern New Hampshire, Vermont, and northern Connecticut. . . . **DEWEY & ALMY CHEMICAL CO.**, Cambridge, Mass.—Has appointed T. G. Gibian general manager of the Organic Chemical Div.

DIAMOND ALKALI CO., Cleveland, Ohio—Is expanding its market research activities to include research on existing products

BESIDE YOURSELF over needle problems? You needn't be —when you can get top-quality needles for knitting, sewing, felting or tufting from . . .

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Torrington, Conn., U.S.A. Branches in New York, Philadelphia, Boston, Chicago, Greensboro, St. Louis. Pacific Coast Representative: E. G. Paules, Los Angeles

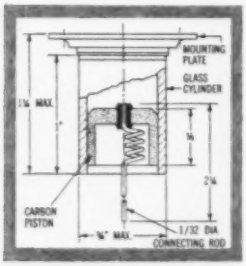
For more data, write this page number on Reader-Service card. →

AIRPOT*

The *New* Precision Dashpot for Vibration Damping; Maintains Permanent Calibration

This new pneumatic dashpot for time delay, vibration damping, and stabilization provides either two-way damping, or one-way damping action in either direction through millions of cycles.

Features of the new AIRPOT are: precision construction, small size, ease of mounting, adjustability, reliability, and long life.



PERFORMANCE DATA

Damping constant: adjustable up to 2.0 lbs/inch/sec.

Static and Sliding Friction Coefficient: less than 0.2.

Temperature Range: from —75°C to 150°C.

Choice of cylinder lengths, and connecting rod spring gradients of 6.6, 10, 20 and 200 lbs.

Write or call for specific information.

ELECTRIC REGULATOR CORPORATION / *Manufacturers of REGOHM* Regulators and MAGOHM* Magnetic Amplifiers* *T.M.

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UTICA Knit Cloth Rolling Machine

(not a finishing machine)

UTICA'S Cloth Rolling Machine is designed for rough rolling knit cloth for storage or for rolling up damp cloth. It is made to take widths of 30", 36", 42", 48" and 54" (wider to order). Spreader guides are made of rubber. Has built-in varispeed motor drive, 3 ranges—20 to 50, 40 to 100, 80 to 200 yards per minute. Furnished with either fabric covered or metal plated rolls for rolling up damp material. Heavily built and well guarded for long trouble-free wear. It can be used in conjunction with the Utica Turning Pipe and Pipe Loading attachment. *Send for details.*

UTICA Turning Pipe and Pipe Loading Attachment

Made of brass or steel and slotted.

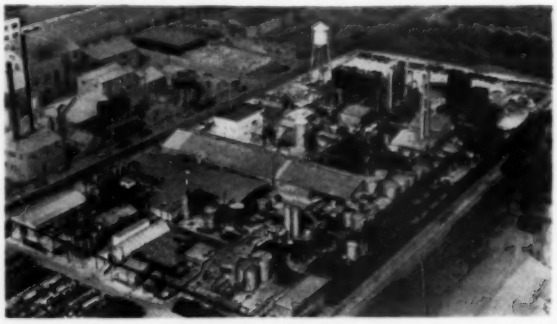
LOADING ATTACHMENT:

Equipped with conveniently located handle on left side to open and close feed rolls. Built-in motor drive automatically turns off when rolls are opened up and starts when drawn together. Shafts have sealed-in-grease ball bearings. Completely guarded—ruggedly built—easy to clean. Loading rolls covered with rubber sleeves (leather laced loading rolls also available).

For further information write:

UTICA Novelty and Mill Specialty Company
2145 Dwyer Avenue **Utica 2, New York**
Builders of Textile Machines Since 1905

as well as on new products. . . . **DOW CHEMICAL CO.**, New York, N. Y.—Has opened a new sales office in Dallas, Tex. D. P. Camp has been appointed manager. Jane O'Leary Harvey has been named fashion coordinator for Zefran, with headquarters in New York. . . . **J. EISENBERG, INC.**, New York, N. Y.—Has named H. H. Frede sales manager. . . . **EMERY INDUSTRIES, INC., CHEMICAL DIV.**, Cincinnati, Ohio—Has named M. R. Tucker fatty-acid sales representative for the Cincinnati, Ohio, territory. . . . **FOXBORO CO.**, Foxboro, Mass.—Has appointed E. R. Huckman assistant field sales manager. . . . **GEIGY CHEMICAL CORP., GEIGY DYESTUFFS DIV.**, Ardsley, N. Y.—Has announced that G. Leitner has joined the staff of the Textile Pigment Research Laboratories.



EMERY INDUSTRIES, INC., Cincinnati, Ohio, has acquired the Vopcolene Div., Vegetable Oil Products Co., Los Angeles, Calif. (shown above). The sale included the name, products, and manufacturing facilities.

GOODYEAR TIRE & RUBBER CO., Akron, Ohio—Has appointed E. F. Kiernan to the Film and Sheeting sales staff. F. A. Bozzacco has been appointed sales engineer with the coatings department of the Chemical Div. . . . **HILTON-DAVIS CHEMICAL CO.**, Cincinnati, Ohio—Has opened a new customers' service and sales office in Trenton, N. J. . . . **HOBBS MFG. CO.**, Worcester, Mass.—Has been appointed exclusive distributor of the Jaco Autogil. . . . **HOWARD BROS. MFG. CO.**, Worcester, Mass.—Has named F. J. Campbell to the sales staff. His headquarters will be in Greenville, S. C. . . . **INDUSTRIAL RAYON CORP.**, Cleveland, Ohio—Has transferred D. Gordon from the research division to the rayon textile-yarn sales division.

WALTER KIDDE & CO., INC., Belleville, N. J.—Has elected W. J. Behr, Jr., and W. E. Morgan, Jr., to the board of directors. . . . **LASSITER CORP.**, New York, N. Y.—Has named N. A. Olson to the Chicago, Ill., sales staff. . . . **METRO-ATLANTIC, INC.**, Centredale, R. I.—Has appointed E. F. Starke director of merchandising for all its branded finishes. . . . **NUODEX PRODUCTS CO., DIV. OF HEYDEN NEWPORT CHEMICAL CORP.**, Elizabeth, N. J.—Has appointed W. B. Philipbar, Jr., product sales manager of the Stearates Div. . . . **OLIN MATHIESON CHEMICAL CORP., INDUSTRIAL CHEMICALS DIV.**, New York, N. Y.—Has named J. F. Carey industry sales specialist for textiles with headquarters in Baltimore, Md. . . . **PARAMOUNT PACKAGING CORP.**, Philadelphia, Pa.—Has bought the assets of the Flexible Packaging Div., Container Corp. of America, Chicago, Ill.

PENICK & FORD LTD., INC., New York, N. Y.—Has named J. P. Bainbridge, Jr., assistant sales-service manager to Dr. J. E. Killinger. His headquarters will be at Cedar Rapids,

New!
Oakite solvent cleaner #117 removes lint, oil, smut from

LOOMS **TWISTERS**
MOTORS **REED PARTS**

Brush it on or spray it ... blow it off or wipe it ... Oakite 117 removes every trace of soil from textile equipment – quickly, safely, economically. Fast dry-down, high flash point, the perfect solvent for textile mills. Write for details to Oakite Products, Inc., 42 Rector Street, New York 6, N.Y.

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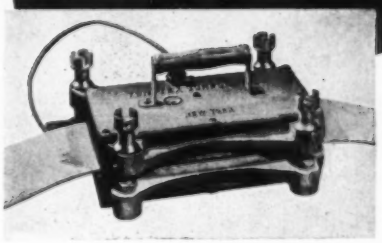
TON-TEX VULCANIZING SYSTEM



Time Tested for 20 Years.

The only complete system for making belts endless on your machines, including Ton-Tex tools, cements, instructions, and the #1000 Ton-Tex Vulcanizer.

This practical low priced 2 plate #1000 was developed and patented by Ton-Tex to meet the demand for a lightweight portable unit. Weighs only 37 lbs., and operates from any lamp socket outlet. Includes automatic thermostat control, pilot light, and heat indicator.

Write for complete literature.

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GREENSBORO, N. C. 1910 E. Wendover Ave.
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Serving Industry Over a Quarter Century

NEW REVOLUTIONARY

GRATON AND KNIGHT

NYCOR

FLAT BELTING

NO STRETCH

NO TAKE-UPS

NO LOST PRODUCTION

G&K NYCOR belting is proving its worth to the many superintendents and overseers who have installed it on their Lickerin and Doffer drives. Its stretch-free feature, and its great coefficient of friction will give you more production – eliminate take-ups, and reduce maintenance costs.

Send For Brochure on Nycor Belting

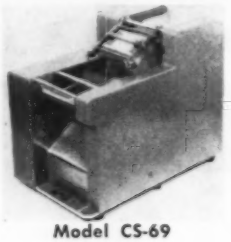
GRATON & KNIGHT *Company* INC.
WORCESTER 4, MASSACHUSETTS

LAB. BLENDER—NEP COUNT

Designed by the United States Dept. of Agriculture

The *Mechanical Cotton Blender* effectively blends cotton samples 20 times faster than by hand. The principal feature is an adjustable feed plate in combination with a fluted feed roll which feeds a sample into a rotary blending cylinder. Blending or carding of dyed samples for color comparison is another use of this unit. (ASTM D1441-54).

Model CS-45



Model CS-69

The *Nep Test Machine* provides a rapid and satisfactory method of preparing specimens of raw cotton for nep evaluation. The design of this machine incorporates the principal mechanical assemblies of textile carding machines in order to simulate commercial production methods. (ASTM D1446-53T).

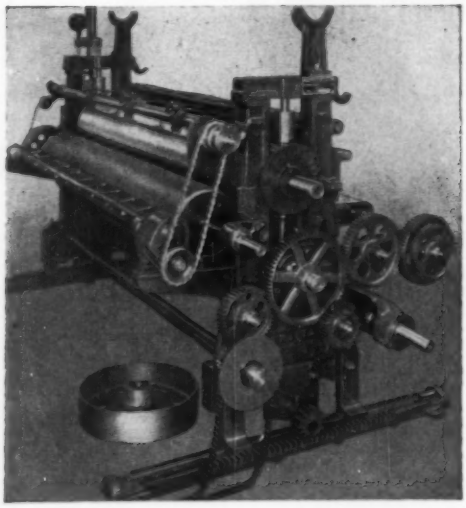
Folders and price upon request

As our name implies we also welcome the opportunity to work on custom design and manufacture of testing instruments of all types for individual and general needs.

CUSTOM SCIENTIFIC INSTRUMENTS, INC.
541 Devon Street Kearny, N. J.

"CONVERSION UNITS"

WILL INCREASE the EFFICIENCY of your
PERALTA® MACHINES
CONVERT NOW TO OUR NEW DESIGN BY INSTALLING:



- Off-Set Roll Arrangement
- Doffing Device Attachment
- Hydraulic Pressure

Write us regarding our new type DOUBLE RUB TAPE CONDENSER for adaptation to woolen cards

Duesberg-Bosson of America, Inc.
Main Street Jefferson, Mass. P. O. Box 25

NEWS ABOUT SUPPLIERS Continued

Iowa. . . . **PITTSBURGH CORNING CORP.**, Pittsburgh, Pa.—Has appointed R. Buckley general sales manager. . . . **RIGGS & LOMBARD, INC.**, Lowell, Mass.—Has bought Cook Machine Co., Nashua, N. H. Cook Machine Co. will operate as a wholly owned subsidiary, and no change in the officers or sales staff is contemplated. All manufacturing and personnel have been consolidated in the Riggs & Lombard, Inc., plant at Lowell. . . . **ROBERTS CO.**, Sanford, N. C.—Has named R. C. Scott advertising manager. . . . **SINCLAIR CHEMICALS, INC., DIV. OF SINCLAIR OIL CORP.**, New York, N. Y.—Has appointed R. L. Hart district sales representative with headquarters in Philadelphia, Pa. . . . **A. E. STALEY MFG. CO.**, Decatur, Ill.—Has appointed N. K. Hammer to the newly created position of field sales manager for industrial products in the corn division.

STOWE-WOODWARD, INC., Newton Upper Falls, Mass.—Has appointed E. Schabloski to the newly created position of sales office manager of its Neenah, Wis., plant. W. H. Mordo has been named technical service manager of the home office. . . . **SUN CHEMICAL CORP.**, New York, N. Y.—Has announced the establishment of a new Textile Color Dept., as a department of the Ansbacher-Siegle Corp., created to furnish pigments, colors, dyestuffs, and clears to the textile industry. J. Hoyt has been appointed product manager. The Textile Color Dept. will be located for the present at 309 Sussex Street, Harrison, N. J. The main offices of Sun Chemical Corp. have been moved from Long Island City to 750 Third Ave., New York, N. Y., and will house all administrative and executive offices. . . . **TAYLOR INSTRUMENTS COS.**, Rochester, N. Y.—Has named L. L. Forward vice president and general sales manager. N. B. Nichols, M. E. Porter, W. M. Walter, K. H. Hubbard, and F. S. Ward have also been named vice presidents.

C. P. MOORE (left) has been named special representative for the Chemical Div., Goodyear Tire & Rubber Co., Akron, Ohio. His headquarters will be in Charlotte, N. C. A. N. WEEKS (center) has been elected vice president in charge of production at Bemis Bro. Bag Co., St. Louis, Mo. JOHN E. SWEENY, JR., (right) has been named to represent Synthane Corp., Oaks, Pa., in western Pennsylvania, northwestern Maryland, eastern Ohio, and northern West Virginia.

U. S. TEXTILE MACHINE CO., Scranton, Pa.—Has named A. W. Thomas executive vice president and general manager. D. W. Scheuer has been appointed to the newly created post of assistant general manager. J. J. James, Jr., has been promoted to production manager. H. Watson has been named plant superintendent and W. James has been appointed purchasing agent.

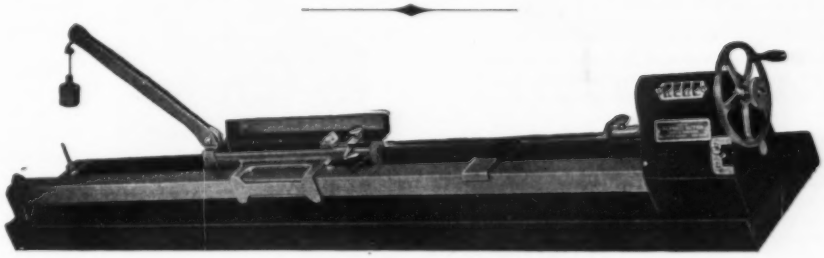
UNIVERSAL WINDING CO., Providence, R. I.—Has constructed a one-story office building at 3205 South Blvd., Charlotte, N. C. It will house its southern Textile Machinery and Instrument Div.'s sales and service staff. . . . **USTER CORP.**, Charlotte, N. C.—Has announced the formation of its new division to be known as Knitrol. The new division will manufacture automatic trimmers for seamless-hosiery machines and special equipment designed to increase the efficiency and productivity of full-fashioned seamers. The headquarters of the new division will be in Charlotte. The new division will also operate out of the Uster Corp.'s current sales and services locations at Boston, Mass., Allentown, Pa., and Atlanta, Ga.

APPROVED

SUTER TESTERS

FOR
TEXTILE PRODUCTION CONTROL

FOR
TESTING LABORATORIES

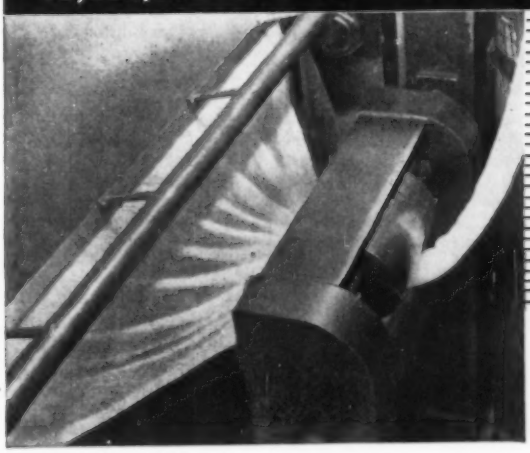


PRECISION TWIST TESTER, 20″ Model, equipped with three cypher reset counter, five inch take-up registering device, and auxiliary clamp for applying pre-determined tension according to denier or yarn count.

ALFRED SUTER CO.

200 FIFTH AVENUE NEW YORK 10, N. Y.

10,000,000 CARDING POINTS NEED PERFECT GRINDING ROLLS



THE CARD-GRINDING SPECIALISTS

DRONSFIELD'S

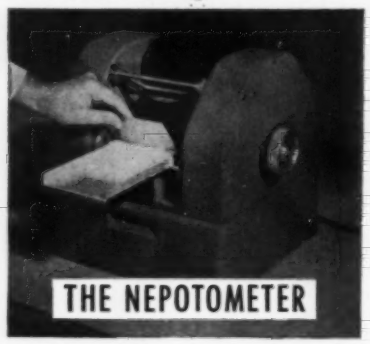
TRAVERSE WHEEL GRINDER No. 120

SOLID GRINDING ROLL No. 112

Sole Makers
ATLAS BRAND
Emery Fillet

DRONSFIELD BROTHERS LTD · OLDHAM · ENGLAND

New Instrument Measures Cotton's Nep Potential



A 25-grain sample is prepared by hand cards and placed on the feed plate of the Nepotometer. Total time required for test, including stripping, is about six minutes.

This high precision instrument simulates manufacturing steps. Simply run a sample, compare it with photo standards which come with the instrument, and you know in advance the nep potential. Saves time and money. Permits you to make the most profitable use of your cotton. Literature upon request.

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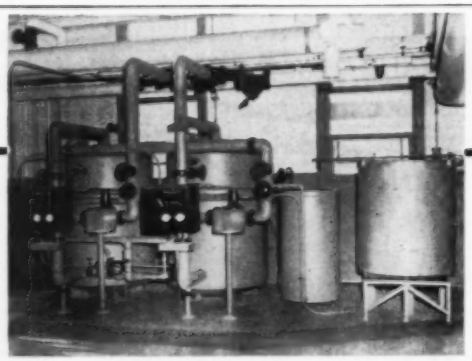


INVERSAND WATER SOFTENER PLANT

Producing

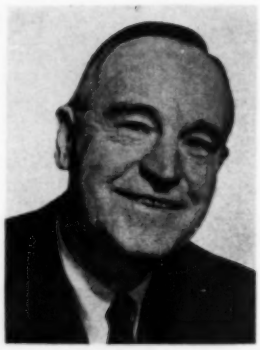
CLEAR-IRON FREE 100% SOFT WATER

Often For As Little As 1¢ per 1000 Gallons

Troubled with harshness, poor finish, uneven shades, redyes, seconds, and other product difficulties—?? The secret of uniformity may lie in your water supply. May we check it for you?

HUNGERFORD & TERRY, INC.
CLAYTON 9 NEW JERSEY

NEWS ABOUT MEN



JOHN FRANCIS HAGEN has retired as assistant to the president of Callaway Mills, Inc., New York, N. Y.

Arthur Binns has been named overseer of weaving at Paragon Worsted Co., Providence, R. I.

J. L. Brannan has retired as superintendent of Waverly Mills, Inc., Laurinburg, N. C.

Lionel Conley has been named second-shift supervisor of frame spinning, twisting, and winding at Pachaug Mills, Inc., Norwich, Conn.

Charles T. Cooper has been named assistant superintendent of the American Thread Co.'s plant at Dalton, Ga.

Raymond Doyle has been elected assistant secretary of Norwich Mills, Inc., Norwich, N. Y. He was an executive of Utica Knitting Co., Utica, N. Y.

Norman S. Dunn has been elected president of Emerson Textile Co., Chelsea, Mass.

John Durrell has been named overseer of dyeing at Northfield Mills, Inc., Northfield, Vt.

William Garnet has resigned as overseer of dyeing at Northfield Mills, Northfield, Vt.

Edwin M. Griffin has been appointed assistant treasurer of the Beaumont Plant of Spartan Mills, Spartanburg, S. C.

Philip H. Herzing has resigned as president of St. Marys Woolen Mfg. Co., Inc., Div. of Fieldcrest Mills, Inc., St. Marys, Ohio. He will continue as a consultant and director of the company.

Robert R. Hertzler has rejoined Forstmann Woolen Co., Passaic, N. J., as assistant to the president.

Henri F. Horn has resigned as general plant superintendent of the King Philip E. Div. of Berkshire Hathaway, Inc., Fall River, Mass.

Walter E. Ingram has resigned as assistant treasurer and assistant secretary of Delaware Mills, Inc., New Castle, Del.

Jack Keefe has been named overseer of dyeing, second shift, at Quincy Dye Works, Woonsocket, R. I.

E. Stanley Klein has been appointed vice president of Fieldcrest Mills, Inc., Spray, N. C.

James P. McDermott has been named vice president in charge of administration of Diamond Hosiery Corp., High Point, N. C.

Troy E. McElreath has resigned as assistant superintendent at Hayward Woolen Co., East Douglas, Mass.

G. W. Moore has been appointed vice president of Fieldcrest Mills, Inc., Spray, N. C.

Clifford W. Nelson, Jr., has been promoted to manager of Thomaston Mills, Bleachery Div., Thomaston, Ga.

Kit C. Patrick has been named assistant superintendent at Hayward Woolen Co., East Douglas, Mass.

Charles H. Pflanz has been elected vice president and secretary of Norwich Mills, Inc., Norwich, N. Y. He had been secretary of the company.

George W. Pierce has resigned as assistant vice president and executive director of American & Efird Mills, Inc., Finishing Div., Mt. Holly, N. C.

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working capital?

If you feel that your business could expand if you had more working capital . . .
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Since 1840 we have helped manufacturers and merchants operate their business on a cash basis with resultant profits. Our factoring service makes financing available . . . when you need it and also relieves you of credit losses and collection problems.

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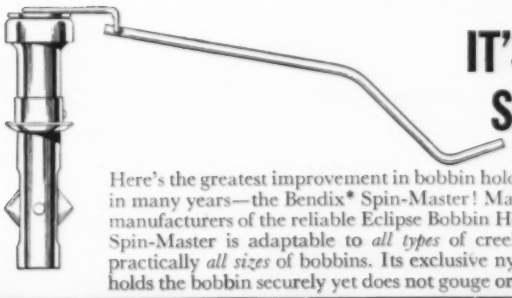
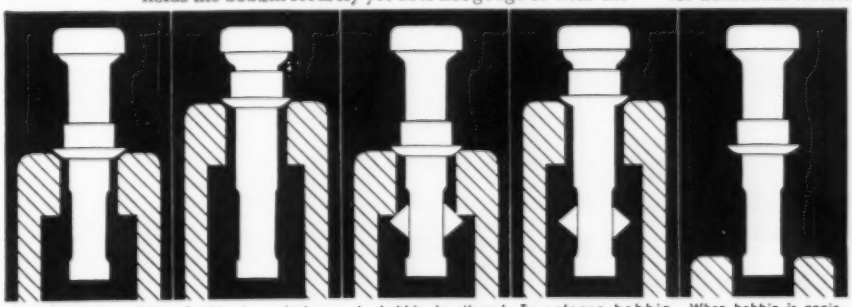
In California: L. F. DOMMERICH & CO. California Corp., 819 Santee St., Los Angeles 14, Calif. • TRinity 7171



IT'S HERE! THE ALL-NEW BENDIX SPIN-MASTER BOBBIN HOLDER!

Here's the greatest improvement in bobbin holder design in many years—the Bendix* Spin-Master! Made by the manufacturers of the reliable Eclipse Bobbin Holder, the Spin-Master is adaptable to *all types* of creels and to practically *all sizes* of bobbins. Its exclusive nylon latch holds the bobbin securely yet does not gouge or wear the bearing surface. Because of its unique design, the Spin-Master makes creeling a one-hand operation. Its extra-free rolling action is superior to that provided by any other bobbin holder. And, of course, it is thoroughly corrosion resistant. Order today, or, if you prefer, write for additional information. *REG. U.S. PAT. OFF.



Bobbin holder slides easily and freely into top of bobbin. Nylon latch is concealed within the barrel of the holder.

Bobbin is pushed up against collar of bobbin holder. At this point, latch is still concealed inside the bobbin holder.

As bobbin is allowed to drop, collar of bobbin holder slides down to original position and latch snaps into place, suspending bobbin.

To release bobbin from holder, the bobbin is again pushed up, raising the collar of the holder. Latch is still securely in place.

When bobbin is again allowed to drop, latch retracts into body of bobbin holder, so that bobbin may be easily removed.

- **Eliminates Bobbin Wear**
- **Easy, One-Hand Creeling**
- **Fits All Standard Creels and Bobbins**
- **Easy-Rolling, Stainless Steel Bearings**

Bendix-Elmira, N. Y.
ECLIPSE MACHINE DIVISION

Bendix
AVIATION CORPORATION

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In other areas write to:
Eclipse Machine Division, Bendix Aviation Corporation, Elmira, N. Y.

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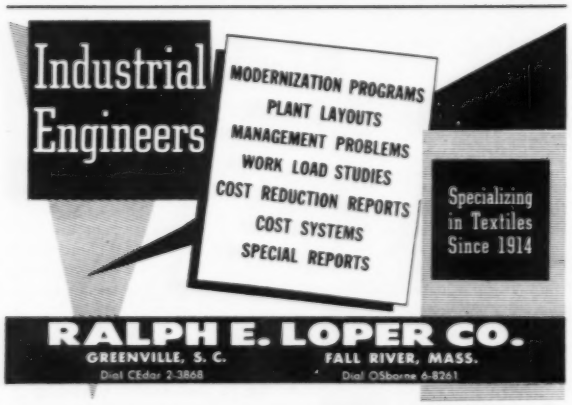

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Ronald S. Smith has been named overseer of dyeing at Striar Textile Mill, Orono, Me.

Raymond J. Stenson, Sr., has resigned as general superintendent of Walter Marshall Spinning Corp., Thornton, R. I.

Arthur S. Thompson has been appointed vice president of Fieldcrest Mills, Inc., Spray, N. C.

Raymond Thompson has been named overseer of dyeing at Eastland Woolen Mill, Inc., Corrina, Me.

William P. Thompson has been appointed product director of the Professional Products Div., Chicopee Mills, Inc., New York, N. Y.

George M. Thurmond has joined Pacific Mills, Div. of Burlington Industries, Inc., Halifax, Va., as vice president. He will be in charge of wool and top buying.

Maurice Valliere has been named yarn superintendent at Guilford Woolen Mills, Inc., Guilford, Me.

G. Frederick Wagner, Jr., has been named general manager of Hampshire Woolen Mill and Ware Woolen Mill, Ware, Mass.

Perry Walden has been promoted from second hand to overseer of frame spinning at Orr Felt & Blanket Co., Piqua, Ohio.

Dudley Walker has been elected president of Walker Knitting Co., Martinsville, N. C.

J. B. Wilkinson has been named overseer of dyeing at Park, Angus Woolen Co., Inc., Hanover, Conn.

Textile World

OBITUARY

Robert E. Barnwell, 77, vice president of Lockwood Greene Engineers, Inc., Spartanburg, S. C.

James Barr, 78, former sales manager of David Gessner Co., Worcester, Mass.

Elmer C. Carling, 48, sales manager of the Pigments Div., American Cyanamid Co., New York, N. Y.

Harry Durand, Sr., 69, president of Durand Hosiery Mills, Chattanooga, Tenn.

Frank X. Gilg, 57, executive assistant in the Boiler Div., Babcock & Wilcox Co., New York, N. Y.

Clyde M. Janes, retired superintendent of Lorraine Mill, Pawtucket, R. I.

Ellis M. Johnson, 74, former president and treasurer of Woodside Mills, Greenville, S. C.

Alfred K. Landau, 73, director of sales research at the Saco-Lowell Shops, Boston, Mass.

Frank L. Miller, Jr., 64, president of United Hosiery Mills Corp., Chattanooga, Tenn., and president of Buster Brown Textiles, Inc., Wilmington, Del.

Otto C. Miller, 71, owner of Hatfield Hosiery Co., Hatboro, Pa.

William Elmo Mitchell, 54, general manager of Russell Hosiery Mills, Spray, N. C.

Abraham Moscowitz, 62, chief chemist for L. Sonneborn Sons, Inc., Belleville, N. J.

Francis P. Reilly, 84, former master dyer at Kent Woolen Mills, Clifton Heights, Pa.

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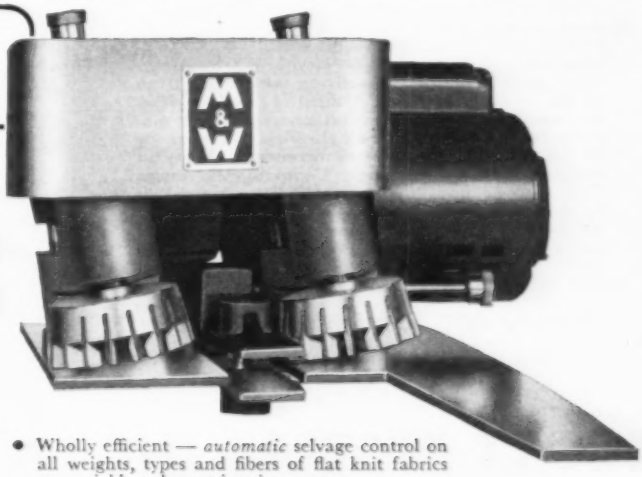

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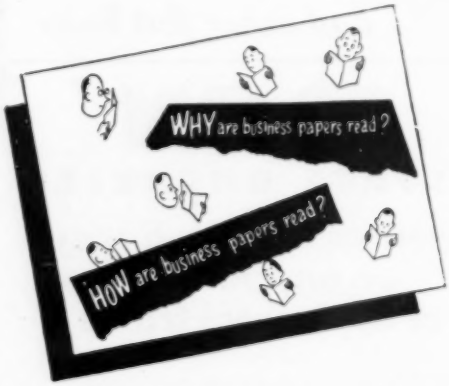

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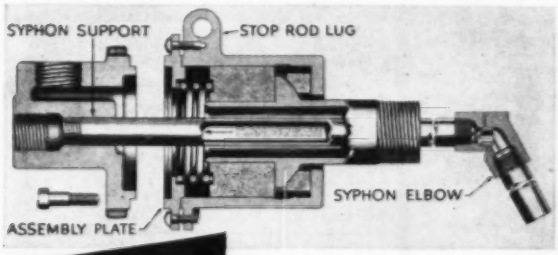

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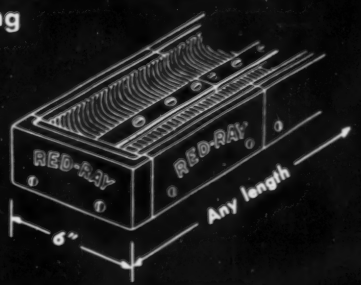

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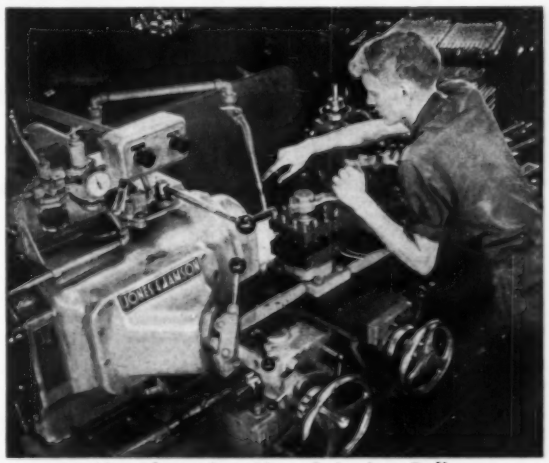

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(Continued on page 212)

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78 Fletcher St. *Glenview 8-6391* Lowell, Mass.
Textile Machinery Dealers

EXPERIENCED TEXTILE PLANT MANAGER

Seeks connection with woolen mill needing man with complete knowledge of both woven and knitted fabrics, from raw materials to finished product. Excellent background in blending of cashmere, woolens, camel hair, mohair, alpaca, including the blending of synthetics with these fibers.

Familiar with all phases of plant management, personnel, production, public and labor relations. Top references.

PW-7514, Textile World
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

POSITIONS WANTED

(Continued from page 210)

Manager or Superintendent of Carpet or Rug Mill. 14 years experience in the Manufacture Carpets and yarns for same. Can supply first rate reference. PW-7506, Textile World.

Senior Design and Textile Engineer with many years experience in General Textile Industry. Desires position in New York area. PW-7446, Textile World.

Research and Development Engineer in Textile Fabrics and Machines. Available in July '58. PW-7454, Textile World.

Raschel mechanic available. High grade man with extensive experience in laces and elastics, capable of originating and analyzing multi-bar fabrics, desires responsible position. PW-7373, Textile World.

Sales Engineer-Finishing and Dyeing Machinery. Mill and sales experience in Woolen, Worsted, Cotton, and Print plants. Knows Northeast and Canada like a book. Age 29. Family. Resume on request. PW-7372, Textile World.

Lowell Textile Graduate. B.S. degree in Engineering, with three years experience in design, production and manufacturing of synthetic fabrics, desires position. PW-7308, Textile World.

Superintendent of carding and spinning 25 years of technical and practical experience installation of textile machinery, set-up training schools for operators and put the mills in operation on course and medium counts languages, technical. Spanish and French. James Edward Little, 321 Mills Avenue, Spartanburg, S. C.

WANTED

Used 16 carrier braiders with 5, 6, 7 or 8 inch horn gears.

W-7573—Textile World
520 N. Michigan Ave., Chicago 11, Ill.

WANTED

AN AUTOMATIC SPOOL WINDER (Ayrton Type) for Double Flanged Wooden Spool for Sewing Threads

Reply **W-7348,** Textile World
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WANTED

#3 NEW ENGLAND BUTT BRAIDERS

also parts for #3 New England Butt Braiders, Carriers, horn gears, etc.

Reply: **W-7407,** Textile World
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J. Laurence Lewis offers at private sale the modern woolen carding, spinning, weaving, twisting and finishing machinery of the

ANDERSON MILLS INC.

(Formerly American Woolen Co.) SKOWHEGAN, MAINE

NOTE: Present plans contemplate the streamlining of the above plants to a condensed Yarn and Greigh Goods Mill. The balance Surplus Machinery, as listed, is available for immediate sale and delivery.

PICKING & RAW STOCK DYEING

1—Davis & Furber 12 Bar—48" Mixing Picker Year 1948 B.B.
1—Davis & Furber Year 1950—48", 6 Bar Mix Picker Ball Bearing
3—Fearnaught Pickers 48" 2 Davis & Furber, 1 C&M
1—Sargent Burr Picker with Feeder
1—Taylor-Styles Model K Staple Cutter Serial No. 1796
4—Dodge Rag Pickers Ball Bearing Cylinders 20" x 30"
2—48" Nub Making Cards—4 Nub Fulling Machines
1—Sample Card 24" x 30"
8—Scribner S.S. Stock Dye Machines 500 Lb. Cap. complete with Pumps, motors, Dye tanks, etc. Self opening Covers.
2—Tolhurst 72" S.S. Basket Centrifugal Extractors, complete with Safety cover, Brake, timer and side mounted motor.
1—Tolhurst Belt Driven 48" Extractor—Copper Basket Overhead Track and electric traveling hoist
1—James Hunter 8 Ft. Stock Dryer, Steel perforated apron and 12 individually motor driven Fans. Complete with J. Hunter Feeder and Temperature control.
4—Sargent Bagging Machiners.

CARDING

4—Davis & Furber 3 Cylinder, all iron sets 60" x 60" Woolen Cards with Bramwell Model F Feeds, Peraltas, Broadband intermediate feeds, metallic Breasts and Whitin Year 1948 Model K4DB Double Rub Tape Condensors taking off 80 Ends. Individual motor driven Waste end blowers.
3—Davis & Furber 3 Cylinder Sets All iron Woolen Cards. First Breaker is 60" x 60" Breast, Peralta and Intermediated Feed is 60" Wide. Second Breaker and Finisher are 48" Wide x 60" Diam. Tapes are 48" Wide Model K4DB Whitin Double Rub Year 1945, taking off 80 Ends. Waste and Blowers.
13—Davis & Furber 3 Cylinder Sets all iron Woolen Cards 48" x 60 Diameter With Bramwell Model F Feeds, Metallic Breasts, Whitin Intermediate feeds, Peraltas. Whitin Model K4DB Double Rub Tape Condensors taking off 80 Ends. Year of tapes 1944 and 1945. Waste end blowers included.
4—D & F as above but with SA Tapes
CLOTHING ON ALL CARDS IS IN EXCELLENT CONDITION ALMOST EVERY CARD HAS AT LEAST ONE OR TWO NEW CYLINDERS CLOTHED BUT NEVER RUN. Large supply of New Repair parts for Cards. Lot of New Card Clothing, Both Leather and Rubber Aprons.
15—Traverse Grinders 60" and 48"—2—60" Floor Type Grinders.
1—Howard Bros. Card Clothing Tension and Winding machine complete with Gearhead motor and all attachments on movable stand.

WOOLEN FRAME SPINNING

6—Model E Whitin Year 1947 Woolen Spinning Frames 120 Spindles, 5" Ring 6½" Gauge.
24—Model E Whitin Frames as above but 1944
6—Model E Whitin Frames as above but 1942
FRAMES ARE COMPLETE IN EVERY DETAIL INCLUDING CHANGE GEARS, AND MOTORS. Large Supply of New Repair Parts, Spindle Banding Etc. Approx. 100,000 Black Enamel 12" Spinning Frame Bobbins all with metal shields. Approx. 1500 Flexi-spools—S6½" Treverse Magnesium.

FANCY TWISTING

9—Whitin Model BB Fancy Twisters, 200 Spindles—3½" Ring 4¾" Gauge, 8" Traverse, Full Creel, individual Knee Brakes and direct driven Variable Speed Drives Westinghouse motors. Year 1935 to 1940.
1—Model BB Fancy Twister same specifications as above—80 Spindles.
2—Model B Whitin Fancy Twisters, 200 Spindles—3" Ring—4" Gauge 7" Treverse, individual Knee Brakes, M. D. Large Supply of Twisters bobbins available.

SPOOLING AND DRESSING

1—Model 60 Davis & Furber High Speed Spooler 48" Wide—40 Ends with Allen V-type Creel for 40 Live Ends (Creel is magazine type) Complete with electric stop motion and direct motor driven thru variable speed motor drive and equipped with Pneumatically operated doffing mechanism.
14—Worcester Warp Compressor Co. Spoolers with Grooved Compression Roll. Spoolers are 48" Traverse with predetermined yardage counters and electric stop motions.
2—Davis & Furber Solid Bar Pinless Dressing Reels, 106" Wide, complete with Hackstand, neck reed, Spool Creel, Beamer and late type compressor.
5—D & F Pinless Dressing Reels Same as above but 96" Wide.

WINDING & WEAVING

120—Spindles Whitin-Schweiter Winders Years 1945 and 1947, in units of 15 spindles. Arranged for 8¾" Bobbins.
1—Foster 102 Winder 100 Spindles. 50 Spindles for paper cones 9" 36° and 50 Spindles for paper tubes. Complete with Empty bobbin conveyors and motor drive.
6—C&K W3 92" Convertible Looms—Loom Order 15938
12—C&K W3 92" Convertible Looms—Loom Order 15083
6—C&K W3 92" 4 x 1 Non Convertible Automatic Looms 13817
76—C&K W3 82" Convertible Looms Ser. from 16179 to 14531.
NOTE: The above looms are all Woolen Looms with shuttle size 18" Long, 2⅛" Wide and 1-11/16" Deep, Bobbins are 8¾" long. All looms have High Cloth Roll Take up and most have automatic let-off.
Approx. 200,000 8¾" Auto. Loom Bobbins available.
1—Toledo Cloth Scale with Weave Room Measuring Perch
3—Electric Cloth Numbering machines
1—H&W Yarn Conditioner, Year 1951, Serial No. FO 1560 Type ST-2, No. 538 72" Deep x 72" wide x 58" High, complete with all electric controls.

WET FINISHING

1—Birch Bros. Tacking Machine—Year 1950
10—James Hunter No. 21 Fulling Mills, 10" Face Rubber Rolls, SS Guides, tub lined with SS, some with SS traps. Late type Link Belt chain on Roll drive, air pressure.
1—Riggs & Lombard double Roll Soaper—40" Wide.
1—James Hunter Washer Model GK—8 ft. Rubber Rolls 18" Dia. direct motor V-belt drive with Air Pressure on Rolls.
1—James Hunter as above but No Air pressure
1—James Hunter 70" Washer Rubber Rolls Gear Motor Drive
2—James Hunter 90" Washer Rubber Rolls Gear Motor Drive
5—Riggs & Lombard Cloth Washers Rubber Rolls 72" Wide with Gear Motor Drive
1—James Hunter Cloth Squeeze Set 72" Wide x 18" Diameter Pneumatic Pressure with Foxboro Control, P.I.V. Variable Drive, with Folder Birch Bros. 86" Scutcher and Cook Detwister.
1—P & W 2 Cyl Wet Brush 66½" Wide with Nylon Brushes, 36" Dia. Motor driven and complete with Folder.
1—James Hunter Carbonizing Unit complete with Wood, lead lined, Acid Tank, Hunter 90" Pneumatic Squeeze Rolls with Reeves Drive and 6 Section Baker—90" Wide.
1—J H 86" Scutcher with Vacuum Extractor slot and Nash Hytor L-5 Vacuum Pump driven by 15 HP Motor 3/550/60.
1—James Hunter No. 20 Dry Fulling Mill direct motor driven.
1—Ingersol-Rand 10 HP Air Compressor—Complete Unit.
10—Stainless Steel Cloth Trucks with Sloping bottoms.

DRY FINISHING

1—James Hunter Pin Tenter Cloth Dryer Handles cloth 50" to 72". Complete with Blake Electric Guiders and Selvage openers. Driven by 7½ HP Reeves Variable Speed Drive. Dryer chain and Cans in excellent condition.
1—David Gessner Full Decatur with Gessner automatic controls and Air Guiders.
1—Parks & Woolson 4 Blade 72" Davidson Shear. Serial No. 8993. Shear is completely motor driven by 7 Motors 3/60/550. Machine is complete with air guiders, turning device and Parks & Woolson Automatic Electric Seam Jumper.
1—David Gessner 72" Hydrolizer Complete.
1—David Gessner 72" High Speed Model PD Press with 20" Cyl. with No. 5 Reeves Drive and motor, and coiling folder
1—Toledo Cloth Scale Model 9612.
1—Open Roll Parks & Woolson Rolling and measuring machine with PIV Drive.
1—Windle Doubling & Measuring Machine Motor Driven.
2—Scott Cloth Testing Machines Model DH, with recording charts, motor driven.
3—Parks & Woolson Model A-2 Blade 66½" Motor driven Shears.
1—Merrow D3B as above but on Dinsmore Stand.
1—Merrow D3B Wide Stitch Motor driven Sewing Machine on Dinsmore Stand.
2—Merrow D3B Wide Stitch Foot Power Sewing Machines on Dinsmore Stands.
24—Mill Type foot power sewing machines.
1—Davis & Furber 100" Late type Napper Grinder with attachments motor Dr.
1—Pair David Gessner 72" S A 18 Roll Nappers in Tandem, Each individually motor driven and each equipped with Reeves Speed Reducer. Year 1936
1—Pair David Gessner 72" S A as above.
1—Pair D & F 72" SA 14 Roll Nappers in Tandem, each napper individually Motor driven.
1—Woonsocket Single Acting Napper 14 Roll, Motor Driven.
1—Davis & Furber 84" Wide 24 Roll DA Napper, motor driven.
1—Davis & Furber 82" Wide 24 Roll DA Napper, motor driven.
2—Davis & Furber 72" Wide 24 Roll DA Napper, motor driven.
1—Pair Davis & Furber 72" DA Nappers in Tandem, Motor driven.
3—Riggs & Lombard 8 Piece SS Piece Dye Kettles enclosed.

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Office Equipment, Desks, Electric Typewriters, Adding machines, Calculators. Electric drinking fountains throughout the mill. Complete electric shop. New Electric Switches, motors, starters, etc. Two Complete machine shops, With lathes, milling machines, shapers, small tools, welding equipment. Metallizing outfit. Fluorescent fixtures. Yarn Testers—Scot Humidification System. American Moisting Co. with Ingersoll-Rand Type ESI Compressor with 60 HP motor. Wood and Steel Yarn trucks. Fiber boxes and canvas trucks. Large supply of nuts, bolts, roller link chain, etc.

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1—24' x 50" face "HAVEC" Acid Ager.
Complete Weisner & Rapp Bleach "Becco" Unit, 3,000 lbs. per hour—Latest Type Rodney Hunt Rope Tensitrol Washer.
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3000—Harness Frames—78"—iron ends—with or without floating bars.
5—Lincoln Lubricating Pumps.
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1—48" Curtis & Marble Mixing Picker—12 bar with Hopper.

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1 New W & J 60" Weft straightener
2500 rebuilt tenter clips M & W #7, W & J #5, W & J #7.
3—New 50" decatizer blankets 700 to 1100 yards
1 set 27-126" copper cans
1 set 18-80" x 30" copper cans
2 Morrison 70" Dye Jiggs
1 Werner 64" SS Dye Jiggs
8 VV 50" S Dye Jiggs
1 James Hunter 80" 2 rubber roll padder
1 Set of 21 141" SS cans BB Johnson joints, etc.
1 66" VV low-type palmer

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20—C&K double shuttle Plush Looms.

equipped with two (2) positive and one (1) conditional let-offs; 14 harness double vibrator, heavy duty C&K head motion; bat wing type picking motion; worsted type boxes. Loom parts, harnesses and two (2) 30 inch Mossberg welded steel beams per loom.

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16 tied for 10240 ends. 4 tied for 9600 ends, 4 tied for 7200 ends. Looms equipped to take five Beams. Halton single lift, single cylinder 1304 hooks. Steel Gantry located 90 inches above comber Board.

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Good Machinery—Low Prices

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1—"Fletcher" 60" Extracter
1—3 Roll Print Machine 60"
Vertical—12 can dryer-copper cans 80" wide 30" dia.
Vertical—copper 18 can dryer 80" wide—30" dia.
27 Can dryer—copper 126" x 23"
Hinnekins 2 roll padder—new—66"—15 ton
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1—TUBULAR KNITGOODS CALENDER—Pernick, w/steamer, Spreaders, Blower.
1—SEMI-DECATUR—P&W., Cyl. 72" face x 60" dia., Guiders, L6 Vac. Pump.
1—DESPECKING Machine — P&W., w/ Folder, Scray, 10 Hp. Mtr, Exhaust Fan.
1—CAN DRYER—Text. Fin. Co., Horiz., 18 tinned Copper Cans, 49½" Face.
1—EXTRACTOR—Tolhurst, S.S., 60" Basket, 20½" deep, 10 Hp. Motor.
1—NAPPER ROLL GRINDER—D&F., Wheel 4½" x 12" dia., 104" long.
1—CLOTH GUIDER, 66", Air Operated, Adj. Stand, Chrome/Rubber Rolls.
1—LONDONIZING Mach., P&W., 80", w/ S.S. Steam Box, Rollup Device.
3—MEASURING, DOUB., WINDING Machines, P&W., 66", 76", motorized.
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2—SINGLE ACTING NAPPERS—Gessner, 80", 18 V-Belt Driven Rolls.
1—DOUBLE ACTING NAPPER—Gessner, 72", 18 Gear Driven Rolls.
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1—QUETSCH—V. Vlaan., 3 Roll, 50", w/2 Rubber Rolls—1 Bronze Roll.
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1—KNITGOODS SHEAR — C&M., Single Blade, 66-1", Folder, Motorized.
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1—TENTER FRAME, Over & Under, 60" x 30', 3 Pipe Coil Heating Sections.
1—TENTER FRAME, V. Vlaan., Clip Type, 1948, 66" x 40', Elec. Guiders.
1—TENTER FRAME—McCreary, S.S. Clip Inserts, 72" x 50', Reeves, M.D.
1—TENTER FRAME, Over and Under, 100" x 75', Pin Type, Elec. Guiders.
1—CLOTH TESTER—Scott, Model J, 250-500# dial, Motor Drive.
1—TIGER—PW., 90", 3 Section, w/Exhaust, Manifold, Motor Drive.
1—UPRIGHT DOUBLER & TUBER — V. Vlaan., 58" Cloth, Yardage Counter.
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3—70" V. V. Beamers, Heavy Duty, 5 H.P. U. S. Vari-Drive, S.S. Rollers, S.S. Slide Tension Expander Device.
8—60" Werner Dye Jiggs, stainless.
1—78" Hunter 15 ton Pneumatic Padder, 2 rubber rolls. 78" x 18".
2—Brand New 66" Pneumatic Padders, 2 rubber rolls each, 15 ton & 5 ton.
1—64" Progressive Inspect. & Meas. Machine, with reverse—$550.
1—Open Washer, 2 compartments, 2 sets of 66" rubber Squeezers 10" dia $1100.
1—64" Progressive Tuber, Hi Speed $600.
1—66" Pad Dyeing Machine, 2 rubber rolls 12" Dia. with Foxwell Guiders.
1—60" Pneumatic Padder, 2 rubber rolls, Reeves—$1300.
1—Set of Mt. Hope Guiders, adjustable.
16—5' to 16' S.S. Dye Becks, tensionless.
1—Merrow 60 D3B Sewing Machine with Motor, on Birch Bros. Portable.
1—60' V. V. Tenter Frame, S.S. Clips.
1—Woonsocket Napper, 86" wide, 36 rolls, double acting, ball bearing rolls, clothing like new—$1500.
3—Sets of rubber Squeezers 18" x 18".
1—Card Cutter, Fine Index, $200.

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FOR SALE

4—Whitin Model L2FS Drawing Frames 4 deliveries each, age 1950
1—Atwood Model 200, 92 spindle Redraw Frames. 10" gauge, Age 1948
20—Atwood Model 110 Headless Package Up-Twisters
184 spindles each, 6" x 4"
2-lb. package, 550 volt motors
40—Fletcher Heavy Duty Up-Twisters
208 spindles each
1-lb. package, spool take-up, Age 1947-1950
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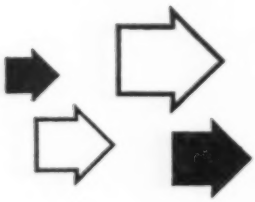

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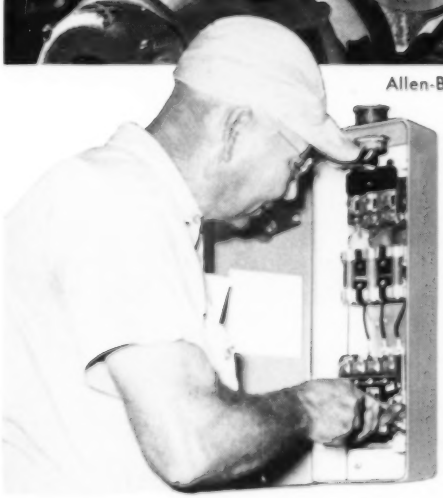
Allen-Bradley Bulletin 712 combination starter on spinning frame driven by Louis Allis 75 hp textile motor



Safe for the operator . . . safe for the maintenance man . . . safe for the machine! They are safer . . . lower in installation cost . . . and much *neater* in appearance . . . than an installation consisting of a separate disconnect switch and a separate starter. Such are the claims that can be made for modern A-B combination starters.

The Bulletin 712 was engineered with "safety" in mind. The cabinet door cannot be opened unless the operating handle is in the "OFF" position—it can be locked "OFF" with up to three padlocks. The serviceman can "see" that the starter is "dead" because *all three* movable contacts of the disconnect switch are plainly visible as open in the "OPEN" or "OFF" position. Also, the incoming line terminals are covered with an insulating shield—there is no chance of accidental contact with a "hot" connection.

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MOTOR CONTROL

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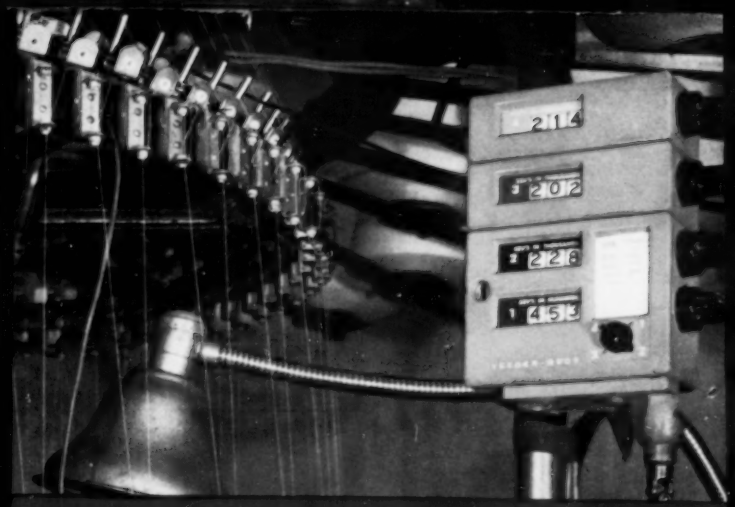
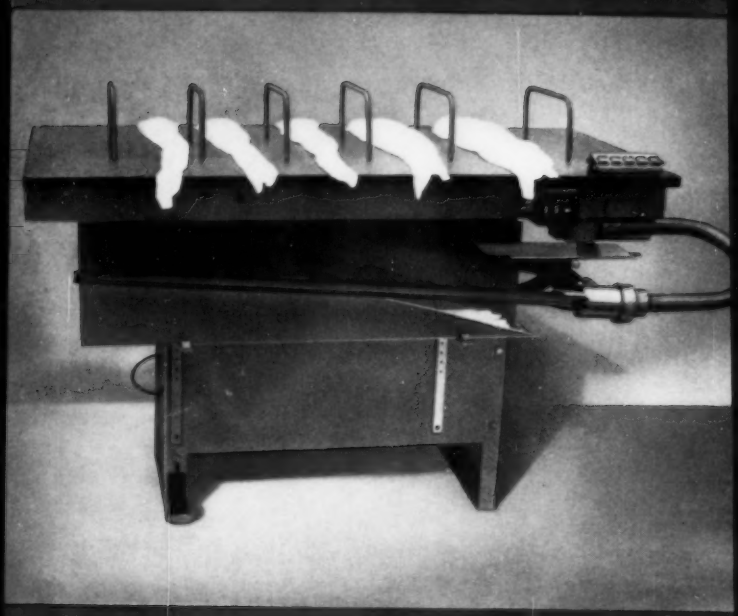


3-shift Veeder-Root Revolution Counter, with Totalizer, on knitting machine at Lawrence Mills, C



Southern Textile Machinery Corporation's Model 3000 ripping-inspection machine, equipped with Veeder-Root Datron Counter and Vary-Tally.

How Modern Knitting Mills Count their Way to Profit...

with Veeder-Root

COST COUNTROL

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Another says: "It's the modern control and can be shaped to your own needs. We figure out the number of pounds by the counter."

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